UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF:

HRE-8J

November 29, 1993

Richard Nemeth
Manager
Environmental Control Department
LTV Steel Company
3100 East 45th Street
Cleveland, Ohio 44127

Re: Visual Site Inspection
LTV Steel Company, East Works
Cleveland, Ohio
OHD 004 218 673

Dear Mr. Nemeth:

The United States Environmental Protection Agency (U.S. EPA) Region V will conduct a Preliminary Assessment and a Visual Site Inspection (PA/VSI) at the referenced facility. This inspection is conducted pursuant to the Resource Conservation and Recovery Act, as amended (RCRA) Section 3007 and the Comprehensive Environmental Response, Compensation, and Liability Act, as amended (CERCLA) Section 104(e). The referenced facility has generated, treated, stored, or disposed of hazardous waste subject to RCRA. The PA/VSI requires identification and systematic review of all solid waste streams at the facility. The objective of the PA/VSI is to determine whether or not releases of hazardous wastes or hazardous constituents have occurred or are occurring at the facility which may require further investigation. This analysis will also provide information to establish priorities for addressing any confirmed releases.

The visual site inspection of your facility is to verify the location of all solid waste management units (SWMUs) and areas of concern (AOCs) and to make a cursory determination of their condition by visual observation. The definitions of SWMUs and AOCs are included in Attachment I. The VSI supplements and updates data gathered during a preliminary file review. During this site inspection, no samples will be taken. A sampling visit to ascertain if releases of hazardous waste or constituents have occurred may be required at a later date.

Assistance of some of your personnel may be required in reviewing solid waste flow(s) or previous disposal practices. The site inspection is to provide a technical understanding of the present and past waste flows and handling, treatment, storage, and disposal practices. Photographs of the facility are

necessary to document the condition of the units at the facility and the waste management practices used.

The VSI has been scheduled for Monday, December 13, 1993 at 8:00 a.m. and Tuesday December 14, 1993. The inspection team will consist of Jeff Swano and John Grabs of PRC Environmental Management, Inc., a contractor for the U.S. EPA. Representatives of the Ohio Environmental Protection Agency (OEPA) may also be present. Your cooperation in admitting and assisting them while on site is appreciated.

The U.S. EPA recommends that personnel who are familiar with present and past manufacturing and waste management activities be available during the VSI. Access to any relevant maps, diagrams, hydrogeologic reports, environmental assessment reports, sampling data sheets, environmental permits (air, NPDES), manifests and/or correspondence is also necessary, as such information is needed to complete the PA/VSI.

If you have any questions, please contact me at (312) 886-4448 or Francene Harris at (312) 886-2884. A copy of the Preliminary Assessment/Visual Site Inspection Report, excluding the conclusions and Executive Summary portion will be sent when the report is available.

Sincerely yours,

for KP

Kevin M. Pierard, Chief
OH/MN Technical Enforcement Section

Enclosure

cc: Dave Wertz, OEPA, Northeast District Office (NEDO)
Murat Tukel, OEPA, NEDO

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5

DATE: APR 1 4 1994

SUBJECT: Justification for Withholding Executive Summary and Conclusions and Recommendations Sections of the Preliminary Assessment/Visual Site Inspection

FROM: Kevin M. Pierard, Chief
Technical Enforcement Section #1
RCRA Enforcement Branch

TO: File

The "Executive Summary" and "Conclusions and Recommendations" sections of the Preliminary Assessment/Visual Site Inspection (PA/VSI) are being withheld as enforcement confidential. This decision is based upon the Freedom of Information Act (FOIA) 5 U.S.C. §552. These sections are excluded based on exemptions 5 U.S.C. §552(b)(5), which state that the PA/VSI is a "predecisional, deliberative document" and 5 U.S.C. §552(b)(7)(A), "disclosure could reasonably interfere with enforcement proceedings".

PRC Environmental Management, Inc.
233 North Michigan Avenue
Suite 1621
Chicago, IL 60601
312-856-8700
Fax 312-938-0118

PRELIMINARY ASSESSMENT/ VISUAL SITE INSPECTION

LTV STEEL COMPANY
CLEVELAND WORKS EAST
CLEVELAND, OHIO
OHD 004 218 673

FINAL REPORT

Prepared for

U.S. ENVIRONMENTAL PROTECTION AGENCY
Office of Waste Programs Enforcement
Washington, DC 20460

Work Assignment No.	:	R05032
EPA Region	:	5
Site No.	:	OHD 004 218 673
Date Prepared	:	March 18, 1994
Contract No.	:	68-W9-0006
PRC No.	:	309-R05032OH1E
Prepared by	:	PRC Environmental Management, Inc. (Jeff Swano)
Contractor Project Manager	:	Shin Ahn
Telephone No.	:	(312) 856-8700
EPA Work Assignment Manager	:	Kevin Pierard
Telephone No.	:	(312) 886-4448

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ENVIRONMENTAL PROTECTION AGENCY

TECHNICAL ENFORCEMENT SUPPORT
AT
HAZARDOUS WASTE SITES

TES IV

CONTRACT NO. 68-01-7351

U.S. EPA WORK ASSIGNMENT NO. R05036

LTV STEEL COMPANY - CLEVELAND WEST
CLEVELAND, OHIO
EPA ID # OHD 046 203 774
RCRA FACILITY ASSESSMENT
DRAFT PR/VSI REPORT

U.S. EPA REGION V

JACOBS ENGINEERING GROUP INC.
PROJECT NO. 05-C024-1024

TETRA TECH, INC.
10 E. CAMBRIDGE CIRCLE DRIVE
SUITE 130
KANSAS CITY, KANSAS 66103

PROJECT NO. TC 3621-92

September 12, 1989

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1.0 INTRODUCTION

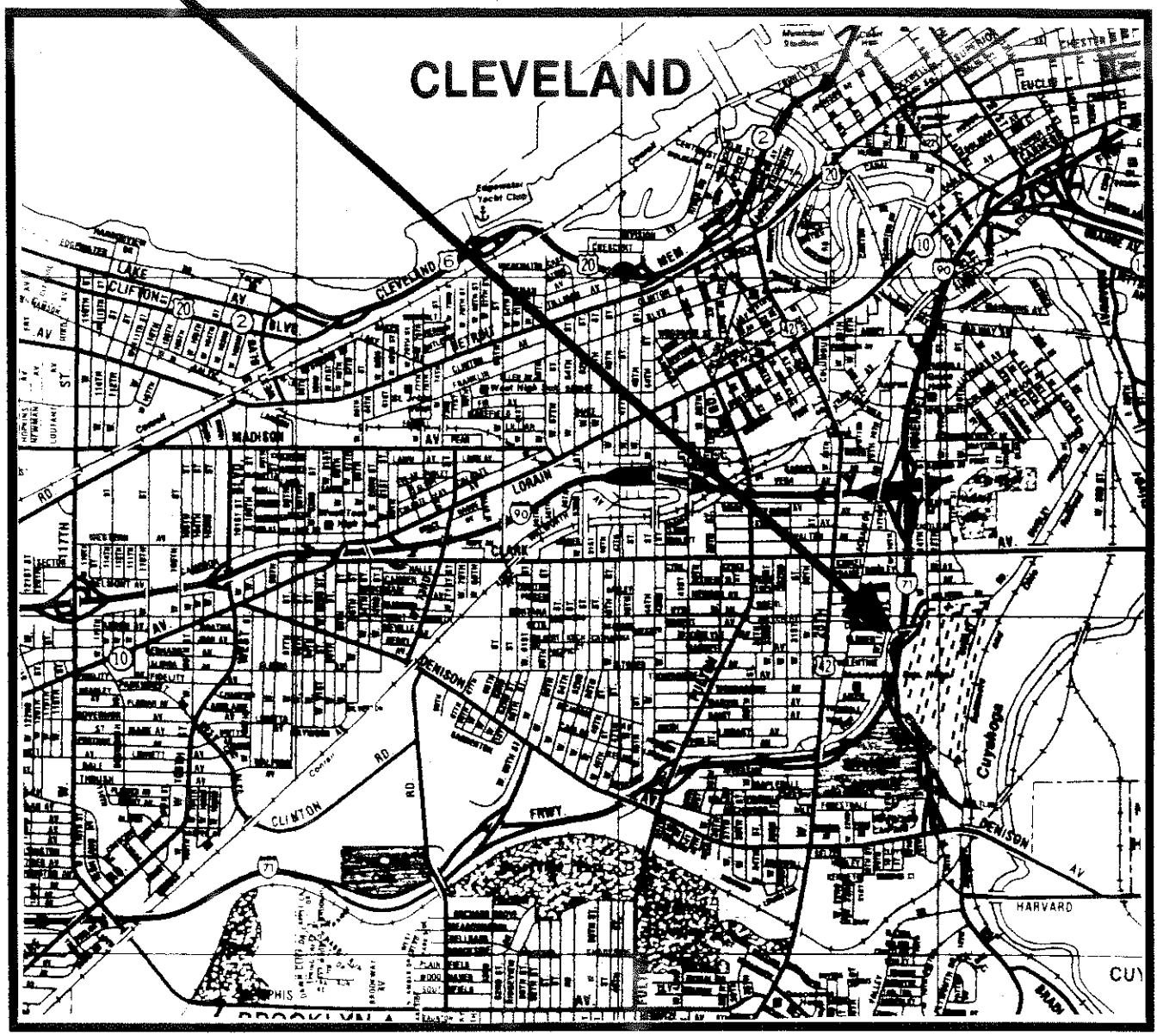
The Hazardous and Solid Waste Amendments of 1984 (HSWA) requires that releases from Solid Waste Management Units (SWMUs) be evaluated for all Resource Conservation and Recovery Act (RCRA) facilities seeking a permit or required to seek a permit. In addition, HSWA authorizes the evaluation of releases from interim status facilities. The evaluation of releases helps to establish the need for corrective action at RCRA facilities. The evaluation of releases has been formalized in the procedures of the RCRA Facility Assessment (RFA). The RFA is composed of a Preliminary Review (PR), Visual Site Inspection (VSI), and where appropriate, a Sampling Visit (SV).

Tetra Tech, Inc. was subcontracted by the U.S. EPA Region V through Jacobs Engineering Group Inc. to perform the RFA at LTV Steel, Cleveland West in Cleveland, Ohio, EPA I.D. #OHD 046 203 774 (Figure 1). Tetra Tech performed the Preliminary Review of LTV files at the Ohio EPA-Northeast District Office (OEPA-NEDO) and the OEPA Central Office on May 30 and 31, and June 1 and 2, 1989. The Draft PR Report was submitted to the U.S. EPA on June 15, 1989. Seven SWMUs at LTV were identified in the Draft PR Report (1). Tetra Tech conducted the VSI on July 24 and 25, 1989 to verify the existence of these units and to identify other SWMUs and other areas of concern. The Tetra Tech site inspection team consisted of Robert Blake and Charles Willhite. They were accompanied on this VSI by Lawrence Szuhay, Corporate Manager of Solid and Hazardous Waste; Tom Harlan, Environmental Management Engineer; Stan Rihtar, Regulation Supervisor; and Gregory Taylor of the Ohio Environmental Protection Agency (OEPA). During the VSI, one new SWMU was identified. Table 1 lists all of the SWMUs, while Figure 2 shows their locations. This report presents the results of the PR and VSI portions of the RFA that Tetra Tech performed at LTV Steel.

2.0 FACILITY AND PROCESS DESCRIPTIONS

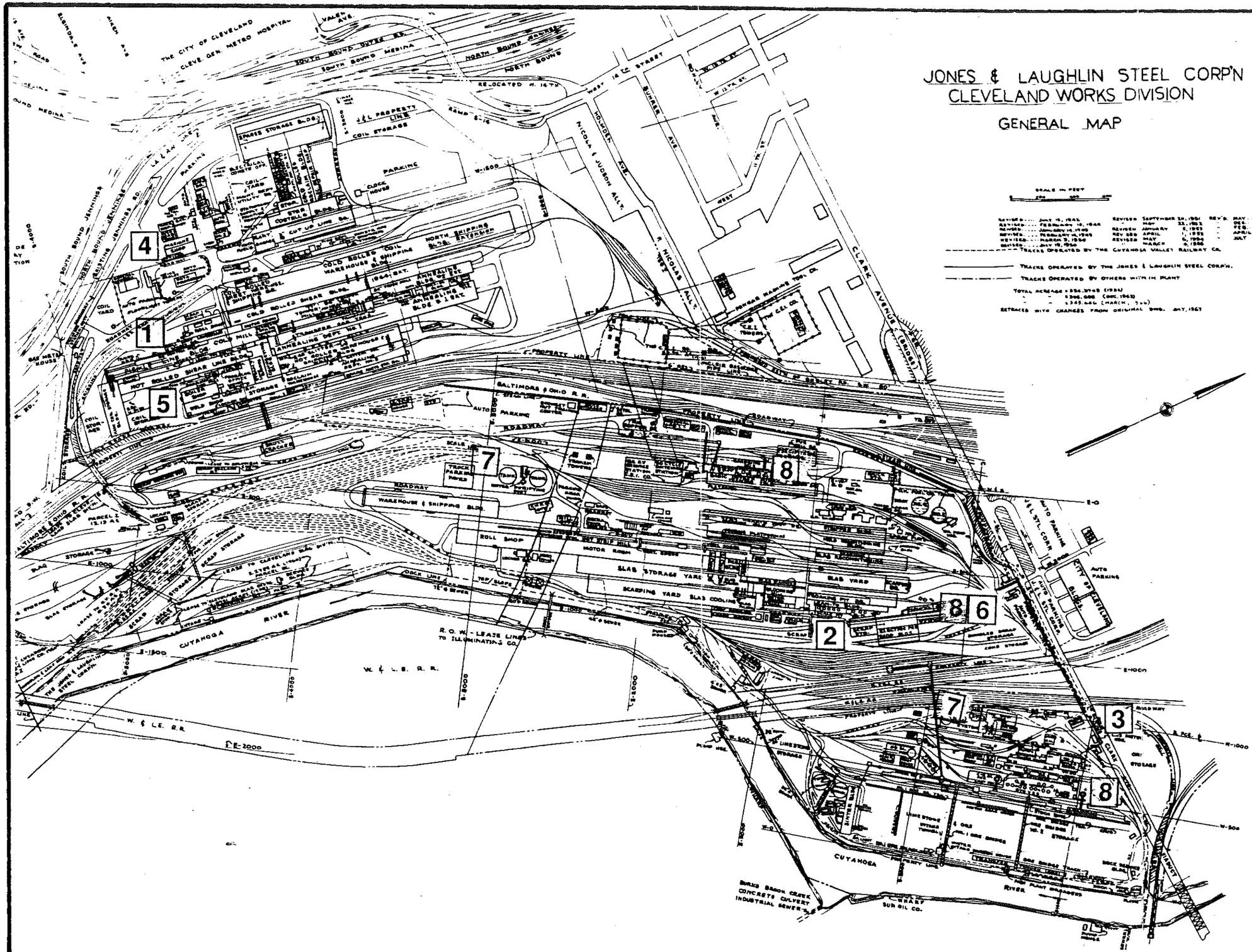
2.1 General Information

LTV Steel operates a large steel making facility in downtown Cleveland, Ohio that is involved in the manufacturing of integrated primary steel (2). The facility is located at 3341 Jennings Road. It is bound by the Cuyahoga River on the east and a commercial area consisting of industries and warehouses to the north, south, and west. Steel making has been conducted at the 235 acre site since the early 1920s. The facility has 1,000 employees and operates three shifts per day, 365 days per year (3). LTV Steel consists of two steel plants formerly known as Republic Steel (on the east side of the Cuyahoga River), and Jones and Laughlin (on the west side of the Cuyahoga River). The activities of the RFA were limited to the facility on the west side of the Cuyahoga River. The facility is now known as LTV Steel-Cleveland West.



Source: UNIVERSAL MAP ENTERPRISES, LANSING , MI.

LTV STEEL CLEVELAND-WEST FACILITY, RFA		
SITE LOCATION MAP		
PROJECT NO.	DATE	FIGURE NO.
3621-92-07	16JUNE89	1



LTV STEEL
CLEVELAND-WEST, RFA

SWMU LOCATION MAP

Project No.	Date	Figure No.
3621-92-07	9-6-89	2

TABLE 1

SOLID WASTE MANAGEMENT UNITS (SWMUs)

LTV STEEL CO. CLEVELAND WEST PLANT
CLEVELAND, OHIO

UNIT NUMBER	UNIT	RELEASE (YES/NO/SUSPECTED/ UNKNOWN)
	SWMUs	
1	SPENT PICKLE LIQUOR STORAGE TANK	YES
2	FORMER ARC FURNACE DUST TRANSFER AREA	YES
3	CADENCE PRODUCT 312 TANK AREA	NO
4	MINERAL SPIRITS HANDLING AREA	NO
5	TRICHLOROETHANE HANDLING AREA	NO
6	EAF DUST TRANSFER AREA	NO
7	WASTEWATER TREATMENT PLANTS AND NPDES PERMITTED OUTFALLS	YES
8	AIR EMISSIONS	SUSPECTED

2.2 Waste Streams and Waste Handling Procedures/Facilities

LTV Steel operates various air emission control systems from three sources. Emissions from the Blast Furnace (BF) are sent to a cyclone dust catcher where particulate matter, such as coke dust and iron oxide dust, are removed. A wet scrubber is used to remove additional impurities from the gas stream. The water from the wet scrubber is sent to the Blast Furnace Water Treatment Plant (BFWTP). The dust from the cyclone dust catcher is mixed with the sludges and dusts from other facility processes at the BFWTP. The mixture of dusts and sludges is disposed of off site in an industrial solid waste landfill. Dust from the electrostatic precipitator on the Basic Oxygen Furnace (BOF) is mixed with other materials at the BFWTP. Sludge is generated from the BFWTP and the Central Treatment Plant (CTP). The CTP treats all the non-contact cooling and wastewater from the BOF, the Electric Arc Furnace (EAF), and all the facility's mill operations. The sludges from the two wastewater treatment plants are mixed with the air particulate materials at the BFWTP intermediate storage area (3).

RCRA Wastes

LTV Steel uses hydrochloric acid to remove scale from steel. This spent acid becomes a listed hazardous waste, K062 - Spent Pickle Liquor (SPL). The SPL from the pickling lines is sent to three sources. Some of the SPL is sent off site under manifested shipments to various permitted treatment, storage, and disposal (TSD) facilities. According to information obtained from the facility's annual hazardous generator report, 2,342,500 pounds of the SPL was utilized on site as a wastewater treatment chemical in the Central Treatment Plant. Additional SPL, totaling 18,929,971 pounds, was sent to the acid regeneration facility at Warren Consolidated Industries in Warren, Ohio (4). The SPL stored on site is in two aboveground, 20,000 gallon storage tanks (3).

Dust is generated from the electric arc furnace (EAF). A total of 17,300,000 pounds was generated in 1988. The dust from the EAF is a listed (K061) hazardous waste. The EAF dust is shipped off site for disposal at various TSD facilities (4).

Organic solvents consisting of 1,1,1-trichloroethane and naphtha mineral spirits are used in the maintenance and electrical repair shops. The mineral spirits are an ignitable (D001) hazardous waste. The spent mineral spirits are generated in parts cleaning stations that are serviced by Safety-Kleen Corporation. Approximately 1,900 pounds were generated in 1988. 1,1,1-trichloroethane is shipped and handled as an F001 hazardous waste by Research Oil, Incorporated (4).

In September 1983, as a result of a compliance evaluation inspection conducted by the Ohio Environmental Protection Agency (OEPA),

it was determined that LTV Steel was acting as a storage facility by storing waste on the ground in a waste pile (5). The waste of concern was K061 EAF dust that was being temporarily stored in piles before being shipped off site. LTV Steel notified the OEPA that on September 12, 1983, the facility had ceased storage of the EAF dust on the ground and loaded the dust directly into trucks (6).

LTV Steel purchased Cadence Product 312 for use as a fuel supplement in its blast furnace (7). The fuel purchased from Cadence Chemical was blended to LTV's specifications from its solvent recovery operations. LTV stored the fuel supplement in an 80,000-gallon, above ground tank prior to mixing it with fuel oil for use as a supplement to coke. The storage tank was not included in the facility's Part A Application. LTV Steel discontinued use of the Cadence Product 312 rather than pursue a RCRA permit for the storage activities (8).

On September 2, 1986, the OEPA served LTV Steel with an Administrative Order to submit closure plans for the EAF dust waste pile and the Cadence Product 312 storage tank (9). LTV Steel had already contracted with Dart Services, Inc. of Canfield, Ohio to decontaminate the Cadence storage tanks and remediate the surrounding areas. Decontamination and removal activities were completed by May 24, 1986. A Conceptual Work Plan has been submitted and is currently under review by the OEPA to determine the extent of EAF contamination at the transfer area and to provide a plan for its remediation (10).

Non-RCRA Wastes

Slag Operations

Slag from the BOF is handled on site by a subcontractor, Stein Slag Company. Slag is dumped on the ground where it is cooled by a water spray. The slag is recovered and resold for use as road fill (3).

Air Emission Controls

LTV Steel discharges furnace and pickling line air emissions through control devices (Section 5, Unit 8). If these control devices should malfunction, elevated levels of particulate emissions may be discharged from the furnaces, and excessive acid vapor would most likely be released from the pickling lines (3).

NPDES Permitted Outfalls

LTV Steel has a total of five permitted outfalls (Section 5, Unit 7). Process water, non-contact cooling water and storm water is discharged to the Cuyahoga River through three permitted outfalls. Two additional outfalls also exist, but these are internal waste-

water treatment plant discharges, which in turn discharge to one of the river outfalls (3).

Materials Piles

LTV Steel maintains piles of non-RCRA materials such as iron ore and scrap. These piles may contribute to increased levels of suspended solids in storm water runoff (3).

Scale Pits

LTV Steel has a finishing scale pit, a roughing scale pit, and a scale pit from the slabbing mill to settle scale and separate oil from its mill cooling waters. All water from the scale pits is treated by the CTP. The scale is periodically recovered and used as BOF scrap (3).

3.0 ENVIRONMENTAL SETTING

3.1 Climate and Meteorology

The climate of Cuyahoga County is mainly humid continental in character, but with strong modifying influences from Lake Erie. West to northerly winds blowing off the lake tend to lower daily temperatures in summer and raise temperatures in winter. Summers are moderately warm and humid with temperatures rarely climbing higher than 90^0 F. Winters are seasonably cold and cloudy, but the relatively warm waters of Lake Erie temper the air temperature of on-shore winds. As a result, sub-zero temperatures occur only in three of five winters. The average annual precipitation is 33.78 inches with average annual snowfall 47.26 inches (11).

3.2 Surface Water and Floodplain

The entire area occupied by LTV Steel drains into Lake Erie (which is nearly five miles away) via the Cuyahoga River, which borders the facility to the east. The LTV site is situated in the Cuyahoga River bottoms. Most of the water supplied to Cuyahoga County come from Lake Erie and the Cuyahoga River since groundwater supplies are limited (11).

3.3 Geology and Soils

Cuyahoga County lies entirely within the glaciated part of Ohio. It has been covered by at least two glaciers in the past 50,000 years. Evidence of the older, Illinoian glacier occurs in the form of sand and gravel deposits in buried valleys lying beneath glacial deposits of the younger, Wisconsonian glacier. The bedrock underlying the glacial deposits is sandstone and shale. The valleys of the major streams lie 100 to 150 feet below the level of the present land surface (11). The LTV facility sits on a soil unit called urban land. Urban land is a miscellaneous unit

consisting of an area covered by buildings, pavement, and related man-made surfaces. Because of this development, little site specific soils data are available for this unit. Slopes are nearly level or gently sloping. Urban land has been built, to a large extent, on older fill. The area along the Cuyahoga River where LTV is located has been filled to varying depths with slag and cinders from the steel mills. Human activities in urban land areas have made the areas almost completely impermeable, resulting in large volumes of runoff.

3.4 Groundwater

Little data could be found on groundwater in the vicinity of the LTV Steel facility. According to the Cuyahoga County Soil Survey, groundwater supplies in the county are limited. Most water supplies come from Lake Erie and the Cuyahoga River (11).

3.5 Receptor Information

The LTV Steel facility is located in a densely populated area near the warehouse and industrial district of Cleveland, Ohio. The Cuyahoga River borders the facility on the east. Municipal water is supplied by the City of Cleveland. All process water, non-contact cooling water, and storm water is discharged to the Cuyahoga River. Effluent from the CTP and the BFWTP is also discharged to the Cuyahoga River. Since the predominant wind direction is from the west-northwest, air emissions from LTV Steel are usually blown towards the industrial and residential areas to the east and southeastern portion of Cleveland. Vehicular traffic entering or leaving the mill includes: 1) cargo trucks and railcars that haul scrap, coke, and limestone to the facility; 2) trucks and railcars to haul finished steel off site; 3) tank trucks hauling spent pickle liquor off site to a treatment, storage, and disposal facility; 4) dump trucks to haul refuse to an offsite sanitary landfill; 5) Research Oil waste oil and Safety Kleen solvent recovery trucks hauling used oil and spent solvent off site; 6) trucks hauling slag products off site.

4.0 RELEASE PATHWAYS

4.1 Soil/Groundwater

Because LTV Steel stores various air and wastewater treatment sludges (CTP, BF, and BOF), raw materials, and slag on the soil of the facility, potential releases to the soil could occur. The potential for contamination to the soil and groundwater is dependent upon the permeability of the upper, unconsolidated deposits. No site-specific information could be obtained describing the conditions at the LTV Steel facility; although it was apparent from the VSI that the entire site is covered, to an undetermined depth, with slag and sinter consisting of fine metallic dust from the many years of previous operations.

4.2 Surface Water

The LTV Steel Cleveland-West facility is located on the west bank of the Cuyahoga River. The NPDES permitted outfalls pose the greatest potential for releases to the Cuyahoga River (3).

4.3 Air

Releases to the air may occur from the blast furnace, basic oxygen furnace, electric arc furnace, and pickling lines. No stack testing data could be found due to the unavailability of the air pollution files at the NEDO office in Twinsburg and the Central Office in Columbus of the OEPA. Excessive emissions to the atmosphere could be expected when any of the control units are malfunctioning. Uncontrolled emissions from the pickling line could contain elevated levels of hydrochloric acid. Emissions from the three furnaces could contain coke dust. The prevailing winds would carry such emissions to the industrial and residential areas east and southeast of the site since the facility is located in the central part of the city (3).

4.4 Subsurface Gas

There is a low potential for the generation of subsurface gas from most of the waste handling units at LTV Steel. Only the Safety Kleen parts cleaning bins and the vapor degreaser use volatile organic compounds. The spent solvent units are all above ground on a brick-lined floor, located in an enclosed building (3).

5.0 SOLID WASTE MANAGEMENT UNITS

This section provides updated information obtained during the VSI on the SWMUs that were identified in the Draft Preliminary Review (PR) report. One additional SWMU was identified during the VSI (Section 6, Unit 6). The two wastewater treatment facilities were combined with the NPDES permitted outfalls (Section 6, Unit 7). Conclusions about the potential for releases to soil/groundwater, surface water, and air, and also the potential for subsurface gas generation are given for each SWMU. Recommendations for further actions at each SWMU are also provided.

1. Unit Type: Spent Pickle Liquor (SPL) Storage Tanks

Regulatory Status: SWMU, active

A. **Unit Description:** SPL is collected in two, aboveground tanks prior to transfer to the Central Wastewater Treatment Facility for use as treatment chemical or for offsite shipment as a K062 hazardous waste.

B. **Age:** Unknown
Period of Operation: Unknown to present

C. **Waste Type:** K062 SPL
Waste Volume/Capacity: Two tanks with a capacity of 20,000 gallons each
Waste Constituents: Hydrochloric acid

D. **Release Controls:** The SPL storage tanks sit above a concrete pad surrounded by a three to four foot high concrete wall that was constructed in the fall of 1988. The secondary containment volume is 34,400 gallons. A curbed concrete truck pad that slopes to the secondary containment exists underneath the SPL storage tanks (3).

E. **Release History:** Two spill incidents of pickle liquor were noted during the file review. The first was a spill which occurred on August 12, 1987, when a truck in the process of being filled was over-topped, resulting in a loss of 400 gallons. Runoff from the spill pooled in the adjacent railroad yards (12). A second spill occurred January 11, 1988, when the same driver from the same transporting firm spilled between 300 and 400 gallons of SPL while loading his truck (13). The spill was neutralized with lime and cleaned up by the facility.

F. Conclusions

Soil/Groundwater: At the time of this VSI, there was little potential for releases from the two SPL tanks to the surrounding soils or to the groundwater because of the containment provided by the concrete pad and the three to four foot high concrete walls. Prior to the construction of the secondary containment, two spills occurred as a result of loading trucks, which resulted in the probable contamination of the soil and possibly groundwater.

Surface Water: Since the SPL tanks are contained by a concrete pad with three to four foot high concrete walls, there is little potential for the release of the SPL to the Cuyahoga River.

Air: There is little potential for releases to the air from the SPL tanks because they are enclosed and the SPL contains no volatile organics.

Subsurface Gas: There is no potential for the generation of subsurface gas because the SPL tanks are set up on steel supports nearly 15 feet above the concrete containment pad and the SPL contains no volatile organics.

G. **VSI Observations:** There are actually four tanks, each with a capacity of 20,000 gallons in the SPL storage area; however, two tanks are for the storage of raw hydrochloric acid. The SPL tanks sit on steel supports nearly 15 feet above the secondary containment (Photograph No. 1). At the time the VSI was conducted, the concrete pad, walls, and truck pad appeared to be of good integrity (Photograph Nos. 2 and 3). No signs of spillage or releases from this unit were noted. LTV Steel representatives stated that prior to construction of the secondary containment, a concrete pad covered with slag was used to load the SPL. The pad was later removed and disposed of as a hazardous waste at a permitted TSD facility. The surrounding soil was tested to ensure that no hazardous constituents remained (3).

H. **Sample Results:** No data have been found to indicate that sampling has been done.

Subsurface Gas: There is no potential for the generation of subsurface gas because the SPL tanks are set up on steel supports nearly 15 feet above the concrete containment pad and the SPL contains no volatile organics.

G. **VSI Observations:** There are actually four tanks, each with a capacity of 20,000 gallons in the SPL storage area; however, two tanks are for the storage of raw hydrochloric acid. The SPL tanks sit on steel supports nearly 15 feet above the secondary containment (Photograph No. 1). At the time the VSI was conducted, the concrete pad, walls, and truck pad appeared to be of good integrity (Photograph Nos. 2 and 3). No signs of spillage or releases from this unit were noted. LTV Steel representatives stated that prior to construction of the secondary containment, a concrete pad covered with slag was used to load the SPL. The pad was later removed and disposed of as a hazardous waste at a permitted TSD facility. The surrounding soil was tested to ensure that no hazardous constituents remained (3).

H. **Sample Results:** No data have been found to indicate that sampling has been done.

I. **Suggested Further Actions:** As part of an SV, soil samples should be taken in the general area of the SPL tank and truck pad to verify that no hazardous constituents remain in the soil.

2. Unit Type: Former Electric Arc Furnace (EAF) Dust Transfer Area

Regulatory Status: SWMU, inactive

A. **Unit Description:** An area south of the EAF building was previously used for the placement of EAF dust on the ground prior to transfer to tractor trailers for shipment off site. The practice was discontinued in September 1983 when the activity was discovered by the Ohio EPA during a RCRA Compliance Inspection.

B. **Age:** Unknown
Period of Operation: Unknown to September 1983

C. **Waste Type:** Electric Arc Furnace Dust (K061)
Waste Volume/Capacity: Unknown
Waste Constituents: Cadmium (D006), Chromium (D007), Lead (D008)

D. **Release Controls:** None

E. **Release History:** None documented, possible contamination of adjacent area due to wind dispersal.

F. Conclusions

Soil/Groundwater: When the EAF dust transfer area was active, there was the potential for releases to the soil and groundwater from infiltration of precipitation through the waste pile, leaching hazardous constituents. If hazardous constituents still remain in the area as a result of past practices, there is still a potential for the leaching of those hazardous constituents into the soil and groundwater.

Surface Water: Since the EAF dust transfer area is no longer active and due to the distance of the unit from any receiving waters, there is little potential for release to the Cuyahoga River.

Air: The potential for releases to the air would be contingent upon the amount of residual hazardous constituents remaining at the transfer area, since the contaminants would be subject to dispersal by the wind.

Subsurface Gas: Because of the nature of the waste constituents there is no potential for the generation of subsurface gas.

G. **VSI Observations:** The former EAF dust transfer area is underlain by slag and soil (Photograph No. 4). A woven wire mesh fence is used to restrict access. A loading pit exists where over-the-road trucks were loaded by a vacuum truck (Photograph No. 5). If any EAF dust remained in the area, it could not be distinguished from the slag material that has been used as fill throughout the LTV site.

H. **Sample Results:** No data were obtained that indicate any sampling has ever been conducted in the EAF dust transfer area.

H. **Sample Results:** No data were obtained that indicate any sampling has ever been conducted in the EAF dust transfer area.

I. **Suggested Further Actions:** As called for by the Final Findings and Orders of the Director of the OEPA issued by the Ohio Board of Review, a Conceptual Work Plan for the EAF Dust Transfer Area has been submitted to determine the extent of EAF dust contamination and to provide a plan for cleanup of the area. Soil samples should be taken in the EAF dust transfer area. The samples should be analyzed at a minimum for chromium, cadmium, and lead to determine if hazardous constituents are present in soils and slag underlying the area.

3. Unit Type: Cadence Product 312 Tank Area, closed in 1986

Regulatory Status: SWMU, closed in 1986

A. **Unit Description:** An 80,000 gallon tank plus the associated piping and pumping station was used to store Cadence Product 312 prior to injection into the blast furnace. In addition, the unit had a roofed staging area with a holding trough running the length of the cement pad. The tank area was closed and cleaned up under the provisions of a plan submitted by Dart Services, Inc. in May 1986 (7).

B. **Age:** Approximately 20 - 25 years
Period of Operation: Unknown to May 1986

C. **Waste Type:** Cadence Product 312
Waste Volume/Capacity: 80,000-gallon storage tank
Waste Constituents: Unknown

D. **Release Controls:** The cleanup plan written by Dart Services, Inc. stated that the tank was surrounded by a three to five foot high slag dike enclosure (7).

E. **Release History:** None documented

F. Conclusions

Soil/Groundwater: Since the Cadence Product 312 tank and its appartences are not in service and have been decontaminated, there is very little potential for releases to the surrounding soils and groundwater. A review of the daily log incorporated into the cleanup report written by Dart Services, Inc. indicates that all visibly contaminated soil was excavated and placed in drums (7). Disposal was accomplished by Fondessy Enterprises, Inc. of Oregon, Ohio.

Surface Water: There is no potential for a release to the Cuyahoga River since the contents of the Cadence Product 312 tank have been removed and the tank has been decontaminated.

Air: There is no potential for releases to the air since the Cadence Product 312 has been removed from the unit.

Subsurface Gas: Although the operational log mentions the fact that visibly contaminated soil was excavated, the potential remains for the generation of subsurface gas due to the volatile nature of the product handled at the unit, and as a result of past practices in the area.

G. **VSI Observations:** The 80,000 gallon, above ground steel tank sits in an area covered by slag (Photograph No. 6). An inside view of the tank through a hole cut in the side by the removal crew

revealed that the Cadence Product 312 had been removed (Photograph No. 7). The remnants of the pumphouse and containment were also observed during the VSI (Photograph No. 8). No visual evidence of a past spill or release was noted.

H. **Sample Results:** Wipe sample results from Wadsworth/Alert Laboratories are non detectable for volatile compounds in the walls and floors of the tank (7).

revealed that the Cadence Product 312 had been removed (Photograph No. 7). The remnants of the pumphouse and containment were also observed during the VSI (Photograph No. 8). No visual evidence of a past spill or release was noted.

H. **Sample Results:** Wipe sample results from Wadsworth/Alert Laboratories are non detectable for volatile compounds in the walls and floors of the tank (7).

I. **Suggested Further Actions:** Soil sampling on the surface and subsurface should be conducted in the area of the Cadence Product 312 tank to ensure that all contaminated soil has been removed.

4. Unit Type: Mineral Spirits Handling Area

Regulatory Status: SWMU, active

A. **Unit Description:** LTV Steel uses mineral spirits in the machine shop to clean parts. Three parts cleaning bins furnished by Safety Kleen are used to store the solvent. Safety Kleen routinely services the bins by collecting the spent solvent and replenishing the units with new material.

B. **Age:** Eight years
Period of Operation: 1981 to present

C. **Waste Type:** Mineral spirits (naphtha)
Waste Volume/Capacity: 30 gallons for each unit (90 gallons total)
Waste Constituents: Ignitable (D001)

D. **Release Controls:** Primary containment is provided by the steel parts bins that contain the solvent. The parts bins are housed in a sheet metal building with a brick floor.

E. **Release History:** None documented

F. Conclusions

Soil/Groundwater: There is some potential for releases to the surrounding soils and groundwater due to the amount of solvent on hand and because of the imperfect containment provided by the brick floor.

Surface Water: Since the parts washing bins are located in an enclosed building, there is little potential for releases of solvent to the Cuyahoga River. Due to the quantity and volatility of the mineral spirits, a release would not be likely to reach the river.

Air: Due to the quantity on hand and the fact that the solvent is stored in steel parts bins, there is little potential for releases to the air.

Subsurface Gas: Since the parts bins are located above ground on a brick floor, there is little potential for subsurface gas generation.

G. **VSI Observations:** The parts cleaning bins are located at the rear of the maintenance shop. The area where the parts bins sit is underlain with a brick floor that appeared to be of good integrity. There was no evidence of leaks or spills in this area.

H. **Sample Results:** No data could be obtained indicating that any sampling has ever been conducted in the area.

I. **Suggested Further Actions:** No further action is needed at this unit.

5. Unit Type: Trichloroethane Handling Area

Regulatory Status: SWMU, active

A. **Unit Description:** A vapor degreaser exists in the electrical maintenance shop to clean components for electric motors. 1,1,1-trichloroethane is the degreasing solvent used in the unit. When the solvent becomes too dirty to be effective, it is replenished with new material. The waste is stored in 55-gallon drums adjacent to the vapor degreaser for pickup by Research Oil Co., Inc.

B. **Age:** Unknown
Period of Operation: Unknown to present

C. **Waste Type:** 1,1,1-trichloroethane
Waste Volume/Capacity: 110 gallons
Waste Constituents: Chlorinated solvent (F001)

D. **Release Controls:** The vapor degreaser is a steel unit that sits in an enclosed building on a brick lined floor.

E. **Release History:** None documented

F. Conclusions

Soil/Groundwater: Since the vapor degreaser unit is set on a brick lined floor, there is some potential for releases from this unit to the surrounding soils and underlying groundwater. Releases that may occur would result from the cleaning of the unit while replenishing the solvent, and it would be very unlikely that the entire volume of solvent would be spilled.

Surface Water: There is little potential for surface water releases due to the quantity and volatility of the 1,1,1-trichloroethane, a release would not likely reach the river.

Air: There is little potential for air releases because of the wet wall used by the unit to control volatile emissions from the degreasing unit.

Subsurface Gas: Because the vapor degreasing unit is located above ground on a brick lined floor, there is little potential for the generation of subsurface gas.

G. **VSI Observations:** The vapor degreasing unit is housed in the electrical maintenance shop and sits on a brick lined floor. Three, 55-gallon drums of spent solvent were in storage next to the degreasing unit. The 55-gallon drums and the vapor degreasing unit were all of good integrity, with no visual evidence of past spills, releases, or unit overflows noted at the time of inspection.

H. **Sample Results:** No data were available indicating that any sampling has ever been conducted in the trichloroethane handling area.

I. **Suggested Further Actions:** No further action is needed at this unit.

6. Unit Type: EAF Dust Transfer Area

Regulatory Status: SWMU, active

A. **Unit Description:** Electric furnace dust (K061), a listed hazardous waste, is collected in a baghouse dust collector and then transferred to a storage silo prior to shipment off site. The electric arc furnace dust is transferred to over-the-road trailers from the bottom of the silo through an unloading spout. The trucks are parked on a concrete pad while being loaded.

B. **Age:** Six years
Period of Operation: Late 1983 to present.

C. **Waste Type:** Electric arc furnace dust
Waste Volume/Capacity: Approximately 6,500 cubic feet
Waste Constituents: Lead D008 (14)

D. **Release Controls:** The EAF dust silo is an enclosed steel unit with the exception of an unloading spout. The dust silo sits on a concrete pad.

E. **Release History:** None documented

F. Conclusions

Soil/Groundwater: There is little potential for releases to the soils and groundwater from this unit because of the containment provided by the storage silo and the concrete pad where the trucks are loaded.

Surface Water: There is little potential for releases to the Cuyahoga River because of the containment provided by the baghouse dust collection and the enclosed storage silo.

Air: There is little potential for releases to the air from this unit because of the containment provided by the baghouse dust collector and the enclosed storage silo. There was no documented history of any equipment failure resulting in any releases to the air.

Subsurface Gas: Because the electric arc furnace dust contains no volatile organics and the waste is collected and stored in above ground units, there is no potential for the generation of subsurface gas.

G. **VSI Observations:** The loading of the EAF dust onto a tractor trailer unit was observed during the VSI (Photograph No. 9). The storage silo is a vertical, enclosed steel tank that sits on a concrete pad (Photograph No. 10). The baghouse dust collector was also observed during the VSI (Photograph No. 11). The concrete pad and the storage tank appeared to be of good integrity.

No visual evidence of past spills or releases was noted at the time of the inspection.

H. **Sample Results:** No data were obtained that indicate that any sampling has ever been conducted in the area of the EAF dust transfer area.

I. **Suggested Further Actions:** No further action is needed at this unit.

7. Unit Type: Wastewater Treatment Plants and associated NPDES-Permitted Outfalls

Regulatory Status: NPDES - permit #3ID00017*HD, expires September 27, 1990

A. **Unit Description:** The facility discharges process wastewater, non-contact cooling water, and storm water to the Cuyahoga River through three permitted outfalls. There are two other permitted outfalls, but these are internal wastewater treatment plant discharges which discharge to one of the river outfalls. The outfalls and the type of water they may discharge are listed below:

002: Central Treatment Plant (CTP) effluent and storm water

004: Non-contact cooling water and stormwater

007: Blast furnace cooling water and stormwater

601: Blast furnace recycle system blowdown water (discharged to 007).

602: CTP effluent (discharge to 002)

The blast furnace cooling water is treated and cooled at the Blast Furnace Water Treatment Plant (BFWTP). The water is pumped to a mixing tank where polymer is added. After the polymer is added, the water is pumped to two circular clarifiers where solids from the furnace settle out. After settling, the water is cooled in cooling towers. Most of the water is recycled; however, "blowdown" water is discharged through outfall 007. The sludge from the clarifiers is dried using two drum vacuum filters. The sludge is mixed with air control dusts (e.g., Blast Furnace cyclone dust) and sludges (e.g., Central Treatment Plant Sludges) in the BFWTP intermediate storage area. The mixture is disposed off site in an industrial solid waste landfill.

The Central Treatment Plant treats all the cooling and wastewaters from the BOF, EAF, Blooming Mill and Finishing Mill operations. The water from the furnaces and the Blooming Mill is first pretreated in one of two scale pits. Large metal scale settles out in the pits and some oil separation/recovery is also conducted. From the pits, the water is pumped to the CTP's mixing chamber. The water's pH is adjusted in the mixing chamber using SPL as acid and hydrated and/or dry lime as base. These chemicals are stored in tanks at the CTP. The mixing chamber is kept violently agitated by the use of mixers, weirs, and pumps to prevent sludge from settling in the chamber. The mixed wastewater gravity feeds to three clarifiers, where oil and sludge separate from the water. The oil is recovered to a set of three gravity separator tanks. The oil/water mixture from the clarifier is pumped into the bottom of two of the separation tanks. An overflow weir at the top of

each of the first two tanks drains the separated oil to the bottom of the third separation tank. An overflow weir at the top of the third tank drains oil to a storage tank. The sludge from the clarifiers is de-watered and hauled off site to a solid waste landfill after being mixed with other materials at the BFWTP intermediate storage area.

Water from the Finishing Mill operations is pretreated in two oil separation tanks at the CTP. The separated oil from these tanks is pumped to the oil/water separation tanks. The pretreated Finishing Mill water is pumped to the mixing chamber.

B. **Age:** Unknown. All the outfalls, the CTP, and the BF recycle system are at least 13 years old.
Period of Operation: At least 1976 to present (15).

C. **Waste Type:** Wastewaters, stormwaters, and non-contact cooling water
Waste Volume/Capacity: The CTP treats 28,000/gpm when the mills are operating. One of the CTP clarifiers has a capacity of 1.0 million gallons. The other two CTP clarifiers and the Blast Furnace Plant clarifiers are 900,000-gallon units. The SPL used in the CTP for pH control is stored in a 20,000 gallon fiberglass tank. The waste oil storage tank has a 15,000 gallon capacity.
Waste Constituents: Total suspended solids, pH, oil and grease, zinc, lead, ammonia, cyanide, and phenols. Monitoring programs, mandated by OEPA for all discharge sources to the Cuyahoga River in the current NPDES Permit, also listed: ammonia nitrogen, benzene, naphthalene, 2-nitrophenol, and tri- and tetrachloro-ethylene.

D. **Release Controls:** Outfalls 601 and 602 are treated at wastewater treatment plants before being discharged.

E. **Release History:** It was established during the PR that the facility had exceeded its NPDES discharge limits in over 200 instances (1).

F. Conclusions

Soil/Groundwater: The endpoints of Outfalls 002 and 004 are concrete pipes which discharge directly to the Cuyahoga River. Outfall 007 discharges through a quarter-mile long spillway to the river. Releases to the facility's soils are ongoing from the treatment plant sludge handling operations. There is a potential for contamination from the sludge to cause a groundwater release. Leaks in the pits or piping in the wastewater treatment system could cause releases to the facility's soil. There is also a potential for groundwater releases, since the outfalls have been operating for at least 13 years (1).

Surface Water: Treated wastewater and stormwater are discharged to the Cuyahoga River through NPDES-permitted outfalls. There is a high potential for wastewaters that exceed the facility's NPDES limits to be discharged from the outfalls if there should be a breakdown or malfunction in the treatment plants. There is also a potential for surface water releases if storm water should transport contaminated material to a storm water outfall.

Air: There is a potential for air releases particularly from the mixing chamber.

Subsurface Gas: It is unlikely that subsurface gas could be generated from leakage to the soil, since the facility does not discharge volatile or methane producing compounds.

G. **VSI Observations:** All three outfalls were examined. An oil sheen was observed around Outfall 002, but investigation by the VSI team determined that the sheen was from the Cuyahoga River and not from the outfall. No oil staining was detected at the other two outfalls (Photograph Nos. 12, 13, 14, and 15). The treatment plant tanks and equipment appeared to be well maintained and in good condition (Photograph Nos. 16, 17, 18, 19, 20, 21, and 22). Soil releases were noted at the facility's wastewater treatment sludge handling operations (Photograph Nos. 23, 24, and 25).

H. **Sample Results:** The NPDES outfalls are sampled as required in the facility's NPDES Permit. Over 200 violations of NPDES discharge limits were found during the PR (PR Reference). The latest TCLP analyses of the CTP and BFTP sludge did not detect any hazardous components at levels which would make either sludge a hazardous waste (14).

I. **Suggested Further Actions:** Continue monitoring the NPDES-permitted outfalls. The facility should discontinue the practice of spreading wastewater treatment sludge onto soil and construct some type of containment area.

8. Unit Type: Air Emissions

Regulatory Status: Area of Concern, regulated

A. **Unit Description:** The facility has three large air emissions sources. These are the stack and building vent gasses from the Blast Furnace (BF); the Basic Oxygen Furnace (BOF); and Electric Arc Furnace (EAF). Emissions from the BF are vented off the top of the vessel to a "down commer" pipe. The pipe is sent to a cyclone type dust catcher where dry fines, such as coke dust and iron oxide dust, are removed from the gas stream. The stream is next passed through a wet scrubber. The water from the wet scrubber is treated by the BFWTP (Section 5, Unit 7). The dust from the cyclone is mixed with various other facility dusts and sludges at the BFWTP intermediate storage area. The mixture of dusts and sludges is disposed off site in an industrial solid waste landfill. The BOF gas stream is conditioned by the addition of water in the "spark box". The gasses from the spark box are vented to an electrostatic precipitator (EP). The dusts from the EP are mixed with other materials at the BFWTP intermediate storage area and disposed of off site. The operational procedure for the EAF air control system was changed in 1988. Originally, the gas vented directly off the furnace vessel (primary material) was sent to an EP and the gas from the building vents (secondary material) was sent to a baghouse. The primary material was believed to be so hot it would burn the baghouse bags; however, tests in 1988 determined that the primary material would not damage the bags. At the time of the VSI, therefore, the EP had been turned off and primary material was vented through the EP chambers. The large particulate matter dropped out and was caught in the old EP dust collection hoppers in the EAF building. The primary material was then blended with the secondary material and sent to the baghouse. This baghouse is northeast of the EAF. The primary dust caught in the EP hoppers is hauled by truck to a storage bin north of the baghouse building, while the secondary material is sent by vacuum to the storage bin. This dust is a hazardous waste (see Section 5, Unit 6).

The facility also operates several smaller air control systems. The facility pickles (cleans) steel in hydrochloric acid baths before working or coating the steel. The pickling is done in heated and covered tubs. The fumes from these tubs are vented to acid gas scrubbers which are packed columns. Water is pumped into the top of the columns and flows by gravity down the packing, coating it with a thin water film. The hot tub gasses are vented into the bottom of the scrubber. As the gas passes through the packing, the hydrochloric acid is adsorbed into the water film. The scrubber water is collected and sent back to the pickling tubs. The Maintenance Department of the facility uses a 1,1,1-trichloroethane vapor degreaser to clean pump motors and other large parts. The emissions from the degreaser are caught by a wet wall vapor trap. The unit uses a local area exhaust fan to vent

all the vapor emissions out the back wall of the unit. The back wall is kept wet by a cascade of water. The 1,1,1-trichloroethane vapor is adsorbed into the water curtain. The water is stored in drums in the maintenance shop and are periodically removed and disposed of by Research Oil.

Two other processes at the facility generate dusts which must be controlled. Before molten pig iron can be poured (charged) into the BOF furnace vessels, it must have certain impurities (such as sulfur) removed. The charge of iron is poured in a large transfer bucket from a rail car. The transfer bucket is moved under the reladle hood and an oxygen lance is inserted into the molten iron. The impurities in the charge are burned off by oxygen blown through the charge. The gasses from the unit are vented to the reladle baghouse. The dusts from the baghouse are mixed with the other materials at the BFWTP intermediate storage area.

The facility also uses a process known as "scarfing" to clean scale off steel slabs before being sent to the mill operations. The scarfer burns off some of the scale and scrapes off the remainder. The dusts from this operation are trapped in the scarfer baghouse. The scarfer dust is mostly iron and steel, and the facility recycles it to the BOF.

B. **Age:** Unknown
Period of Operation: Unknown to present

C. **Waste Type:** Ash, particulates, acid fumes, EAF dust (K061)
Waste Volume/Capacity: Unknown
Waste Constituents: Hydrochloric acid fume (D002), EAF dust (K061)

D. **Release Controls:** Electrostatic precipitators, baghouses, building vents, venturi dust traps, water sprays, and wet scrubbers (VSI observations).

E. **Release History:** None known. Due to the unavailability of the files at the NEDO office during the PR, Tetra Tech was unable to investigate the OEPA air files for this facility.

F. <u>Conclusions</u>

Soil/Groundwater: Emissions released from the furnaces could cause ash or particulate matter to settle on the facility's soil or surrounding soils. Similarly, acid fumes could be emitted if a stack scrubber should break down. It is unlikely that groundwater could be contaminated by air emissions.

Surface Water: A surface water release could also occur if precipitation runoff should wash air emissions control dusts to the Cuyahoga River via the storm water outfalls. Excess emissions from the facility's operations could result in acid mist, ash, or

particulate matter settling on the Cuyahoga River and causing a release. This is not likely to be a substantial release.

Air: It is virtually certain that if the control devices on the air waste streams break down, a substantial air release will occur. Released material would likely be carried to the southeast or east by prevailing winds.

Subsurface Gas: There is no potential for the generation of subsurface gas from any of the air control devices.

G. **VSI Observations:** Each air emission unit was observed while the Tetra Tech representatives were investigating the source units, such as the BOF and EAF (Photograph Nos. 26-31). It should be noted that certain operations, such as charging the BOF with iron or lowering electrodes into the EAF, can temporarily overwhelm the venting system and produce a surge in particulate emissions. However, both the furnaces are inside buildings with local venting systems which should limit the amount of dust emitted.

H. **Sample Results:** The air files at OEPA which dealt with air sampling were not copied due to time constraints, and no data were found during the VSI.

I. **Suggested Further Actions:** Since these units are regulated air emissions sources with OEPA, no further action is required.

6.0 SUMMARY OF SUGGESTIONS FOR FURTHER ACTION

The following is a summary of suggested further actions for the SWMUs located at the LTV Steel Cleveland-West facility located in Cleveland, Ohio.

Unit Number	Unit Name	Suggested Further Action
1.	SPL Storage Tank	As part of an SV, soil samples should be obtained from locations in and around the former loading area to determine that no contaminants remain from previous loading practices.
2.	Former EAF Dust Transfer Area	Closure of the unit according to an Ohio EPA approved closure plan.
3.	Cadence Product 312 Tank Area	Closure of the unit according to an Ohio EPA approved closure plan.
4.	Mineral Spirits Handling Area	No further action is needed at this unit.
5.	Trichloroethane Handling Area	No further action is needed at this unit.
6.	EAF Dust Transfer Area	No further action is needed at this unit.
7.	Wastewater Treatment Facilities and Permitted Outfalls	Continue to regulate both facilities' discharges under the NPDES program.
8.	Air Emissions	Since these units are regulated air emission sources with OEPA, no further action is required.

particulates, nonhazardous flyash, and No. C2 and C4 blast furnace wastewater and wastewater treatment sludge. These wastes are discussed below.

Nonhazardous lagoon solids have been dredged from the Strip Mill Lagoon (SWMU 18) about once every 10 years and disposed of at the Landfill (SWMU 30). Between 1965 and 1969, scale was accumulated in the Strip Mill Lagoon (SWMU 18), and the water was discharged directly to the Cuyahoga River. Prior to 1965, this wastewater stream was discharged directly to the Cuyahoga River. No further information is available on the constituents of the sludge and wastewater.

Between 1979 and 1981, a large amount of waste PCBs were generated during a PCB reduction program within the facility's hydraulic systems. The facility retained an unspecified outside contractor to remove the PCBs from the hydraulic equipment. According to a 1981 EPA PCB compliance inspection, the facility operated 38 hydraulic systems containing a total of 1,910 gallons of PCBs (EPA 1981). The PCBs were placed in either 55-gallon or 30-gallon steel drums and stored at the Former PCB Storage Area (SWMU 39). Chemical Waste Management, Inc. (CWM), transported the wastes off site and burned the wastes at sea as part of their ocean burning process. In addition, some PCB wastes were incinerated at a CWM facility in Emille, Alabama. Currently, when the facility generates waste PCBs, they retain an outside contractor to remove and dispose of the waste.

Prior to 1982, electrostatic precipitators (Precipitator) (SWMU 7) captured air emissions at the BOFs, LMF, and blast furnaces. While they were operating, nonhazardous precipitator particulates generated in the Precipitators (SWMU 7) were transferred to Silos (SWMU 10 and SWMU 11) using screw conveyors. The Silos (SWMU 10 and SWMU 11) were emptied into LTV dumptrucks and the particulates were disposed of in the Landfill (SWMU 30). Prior to 1965, the precipitator particulates were not captured. In the late 1970s, the facility generated about 100 tons of BOF precipitator particulates per month. In 1982, the Precipitators were replaced by Baghouses (SWMU 9).

In the late 1970s, the No. 1 Powerhouse Precipitator (SWMU 8) was installed. This precipitator collected nonhazardous flyash from the coal-fired boilers of the No. 1 powerhouse. Flyash was transferred to a Silo (SWMU 10) using a vacuum system. According to facility representatives, the flyash was sometimes mixed with sludge accumulated at the Strip Mill Sludge Accumulation Area

(SWMU 17) and disposed of in the Landfill (SWMU 30). Most of the time, the flyash was collected by various coal companies. After dropping off coal at the facility in dumptrucks, the coal companies would transport the flyash off site to be disposed of at unspecified sanitary landfills. In the late 1980s, the No. 1 powerhouse converted to burning natural gas.

Between the 1970s and 1990, the Former Blast Furnace WWTP (SWMU 26) treated No. C2 and C4 blast furnace wastewater generated at the No. C2 and C4 blast furnaces. This WWTP used a vacuum filter to remove the solids from the No. C2 and C4 blast furnace wastewater. The wastewater was discharged to the Cuyahoga River via NPDES-permitted outfall 605 (SWMU 29). The No. C2 and C4 blast furnace sludge was transferred to the Former Blast Furnace Sludge Accumulation Area (SWMU 27). The sludge was loaded onto an LTV dumptruck with a front-end loader and disposed of on site at the Landfill (SWMU 30).

2.4 HISTORY OF DOCUMENTED RELEASES

This section discusses the history of documented releases to groundwater, surface water, air, and on-site soils at the facility.

Between about 1915 and the mid-1970s, coke oven gas condensate containing ammonia, phenols (P048), cyanide (P030), and oil was discharged directly onto the ground from the 75 Coke Oven Gas Drip Legs (SWMU 36) along the coke oven gas line.

On March 5, 1985, a mixture of about 1,000 pounds of hydrochloric acid and 50,000 pounds of spent pickle liquor (SPL) was released onto a pile of BOF dust. The facility intentionally released the mixture from a tanker truck onto the BOF dust, which contained limey slag and metal particulates, in order to neutralize the hydrochloric acid in the mixture. The facility contacted the National Response Center and OEPA about the release. No release to on-site sewers or to the Cuyahoga River occurred (LTV 1985a). No further information is available on the exact location of this release or where the BOF dust was disposed of.

In February 1991, OEPA inspectors observed a leak of the ancillary piping carrying wastes to the 84-Inch Line SPL Tanks (SWMU 3). The leak was located outside of the secondary containment

system and appeared to have been leaking for a while (OEPA 1991a). No further information is available on this spill. However, the area outside the secondary containment system is paved with concrete or asphalt. Any spills from this unit would have most likely flowed to a storm water sewer or to the loading dock sump of the unit. The former would have released to the Cuyahoga River, and the latter would have been pumped into the waste tanks.

Around September 1992, LTV encountered a layer of tar-like material while excavating storm water runoff pond No. 4 near area C of the Landfill (SWMU 30). OEPA determined the waste to have been coal tar decanter sludge (K087) generated from coke plant operations during the 1950s. The material tested hazardous for pyridine and benzene. Approximately 400 cubic yards of the tar contaminated soils were excavated and stored at the Tar Sludge Staging Area (SWMU 32) and ultimately disposed of off site. OEPA required LTV to conduct a RCRA corrective action investigation and remediation in the area (OEPA 1992a).

In 1990, monitoring wells (MW) were installed around areas B and C of the Landfill (SWMU 30). Between June and October 1992, OEPA conducted five groundwater sampling events at the MWs. The maximum concentrations of each of the following contaminants were identified during this time period: the Groundwater in the Area of MW 5 (AOC 1) contained 680 milligrams per liter (mg/L) of ammonia; the Groundwater in the Area of MW 53 (AOC 2) contained 9,000 micrograms per liter (μg/L) of benzene, 7.2 mg/L of ammonia, 550 mg/L of chloride, and 0.18 mg/L of cyanide (P030). OEPA concluded that the high ammonia concentration suggested a release to groundwater from a high-ammonia source. The benzene concentrations in the Groundwater in the Area of MW 53 (AOC 2) were above background and maximum contaminant levels (MCL) of 5 μg/L. OEPA recommended performing an assessment to determine the rate, extent, concentration, and source of the benzene and ammonia contamination (OEPA 1993a).

In early 1993, soil sampling around the Degreaser Sludge Container (SWMU 4), in conjunction with closure of this unit, identified tetrachloroethene (PCE) contamination. Most of the contamination is estimated to be between the ground surface and 20 feet below ground surface (bgs). A total of 9,000 cubic yards of soil is estimated to be contaminated by 5 to 10 pounds of PCE. The facility installed three MWs and periodically sampled them for PCE. As of March 1993, groundwater samples collected from the Groundwater and Soil in the Area of MW 1 (AOC 3) contained 1 to 2 parts per

million (ppm) of PCE, trace amounts of tetrachloroethane (TCE) (PCE readily degrades to TCE), and trace amounts of unspecified chlorinated compounds. The source of the groundwater contamination has been concluded to be the unsaturated soil (OEPA 1993c).

On April 13, 1993, about 60,000 pounds of tar-contaminated soil (K141) was excavated near area C of the Landfill (SWMU 30) during the construction of the storm water runoff ponds. The material was excavated from pond No. 1, placed in dumptrucks, transported to pond No. 3, and spread out to form an embankment. The tar was then noticed and construction stopped. The facility notified the National Emergency Response Center and OEPA. The facility contacted Enviroserve Services, Inc. (Enviroserve), of Cleveland, Ohio, to perform cleanup activities. Enviroserve placed 96,000 pounds of material into dumptrucks and roll-off dumpsters, manifested the soil with a K141 waste code, and transported the waste to the Envirosafe landfill in Oregon, Ohio (LTV 1993a). In addition, about 270 cubic yards of tar-contaminated soil was taken to the Kurtz Brothers landfill (OEPA 1993d).

On November 3, 1993, about 50 gallons of dephenolized liquids entered storm sewers in the vicinity of the Coke Plant WWTP (SWMU 28) during cleanup activities at the No. 1 coke plant. The facility had been putting coal into process tanks to absorb the tank bottoms. Upon adding the coal, the liquid level in one tank rose and spilled onto the ground and flowed into the storm sewer, releasing the dephenolized liquids to the Cuyahoga River. No further information is available on this spill (OEPA 1993f).

2.5 REGULATORY HISTORY

This section describes the regulatory status, facility inspections, operating permits, and underground storage tanks (UST) of the LTV facility. No CERCLA activity has occurred at the facility.

2.5.1 Regulatory Status

Republic submitted a Notification of Hazardous Waste Activity form to EPA on August 19, 1980, indicating that the facility generated; treated, stored, or disposed of; and transported hazardous wastes (Republic 1980a). Republic submitted a RCRA Part A permit application on November 18, 1980,

which listed F001, F003, K087, and K062 wastes being stored in tanks (process code S02). The storage tanks were reported to have a total capacity of 158,460 gallons (Republic 1980b).

On July 26, 1982, the facility submitted a revised Part A permit application to indicate operational changes at the facility (Republic 1982). According to the facility, this revised application was not processed by OEPA because the agency had no standards by which to process application changes (LTV 1986a). As a result, the facility submitted another revised Part A permit application on April 28, 1986. This revised application changed the total storage tank capacity from 158,460 gallons to 146,529 gallons by eliminating nonhazardous SWMUs and adding the 15,000-gallon tank of the 60-Inch Line Tanks (SWMU 2). The application also updated the facility name from Republic to LTV. This revised application, however, erroneously reports the capacity of the 8,000-gallon SPL tank at the 60-Inch Line Tanks (SWMU 2) as being 6,000 gallons (LTV 1986a).

On March 29, 1987, LTV submitted a revised Notification of Hazardous Waste Activity form to EPA. This revision updated the facility's ownership (LTV 1987a).

On April 28, 1986, the facility submitted a closure plan for the 98-Inch Line SPL Tanks (SWMU 1), and indicated in its cover letter it was seeking to terminate its status as a hazardous waste storage facility (LTV 1986a). On October 20, 1986, OEPA disapproved the closure plan and advised the facility to make changes. In addition, OEPA notified the facility that it was required to submit separate closure plans for the 60-Inch Line Tanks (SWMU 2), the 84-Inch Line SPL Tanks (SWMU 3), and the Degreaser Sludge Container (SWMU 4) prior to obtaining generator only status (OEPA 1986b).

In January 1987, the facility submitted a revised closure plan for the 98-Inch Line SPL Tanks (SWMU 1), written by Burgess and Niple, Limited (B&N) (B&N 1987). On August 19, 1987, OEPA conditionally approved the closure plan. OEPA informed the facility that the closure plan had to be reviewed and approved by EPA prior to commencing closure activities (OEPA 1987b). EPA conditionally approved the closure plan on June 9, 1988 (EPA 1988a). Closure activities were conducted between August 23 and October 20, 1988 (B&N 1988d). On February 14, 1989, OEPA approved final closure of the 98-Inch Line SPL Tanks (SWMU 1), and on March 6, 1989, EPA

approved the closure (OEPA 1989a; EPA 1989). In September 1992, the facility scrapped the tanks (OEPA 1992b).

In June 1988, the facility submitted a closure plan for the 60-Inch Line Tanks (SWMU 2) written by B&N (B&N 1988a). OEPA approved the closure plan on September 5, 1989. In June 1990, the facility discovered a failure in an expansion joint in the floor of the unit's secondary containment area. Although samples taken from the soil beneath the failed joint did not conclusively indicate a release from the containment area, LTV proposed to replace the failed joint and to take additional samples at that time. LTV then prepared a modified closure plan (LTV 1991b). In January 1992, the facility submitted to OEPA an amended closure plan. On September 20, 1993, OEPA disapproved the closure plan and issued LTV a notice of deficiency listing 14 points that needed addressing (OEPA 1993e). LTV addressed the 14 points and a modified closure plan is currently pending approval by OEPA, and the status of the subsurface soil contamination is under investigation.

In June 1988, the facility submitted a closure plan for the 84-Inch Line SPL Tanks (SWMU 3) written by B&N (B&N 1988b). On July 26, 1989, LTV submitted a revised closure plan to OEPA. On September 5, 1989, OEPA conditionally approved the revised closure plan (OEPA 1989b). OEPA approved the closure of this unit on October 23, 1990 (OEPA 1991b).

In June 1988, the facility submitted a closure plan for the Degreaser Sludge Container (SWMU 4) written by B&N (B&N 1988c). On September 6, 1989, OEPA disapproved the closure plan (OEPA 1989c). LTV submitted a revised closure plan to OEPA on November 17, 1989. On January 19, 1990, OEPA conditionally approved the closure plan for the Degreaser Sludge Container (SWMU 4) (OEPA 1990a). During closure activities, soil contamination was identified (LTV 1991c).

Soil sampling around the Degreaser Sludge Container (SWMU 4) identified PCE contamination. Most of the soil contaminated by PCE is between the ground surface and 20 feet bgs. A total of 9,000 cubic yards of soil is estimated to have been contaminated by 5 to 10 pounds of PCE. The facility installed three MWs and periodically sampled them for PCE. As of March 1993, groundwater samples collected from the Groundwater and Soil in the Area of MW 1 (AOC 3) contained 1 to 2 ppm of PCE, trace amounts of TCE, and trace amounts of unspecified chlorinated compounds. OEPA has concluded the source of groundwater contamination to be the unsaturated soil

discovered during SWMU 4 closure activities (OEPA 1993c). This unit is still undergoing closure activities.

The facility's current status is that of a large quantity generator and treatment, storage, or disposal (TSD) facility. The facility is still considered a TSD facility because of the pending closure of the 60-Inch Line Tanks (SWMU 2) and the Degreaser Sludge Container (SWMU 4).

LTV leases three portions of its facility to other parties. The cold mill has been leased to LSE (EPA ID No. OHD 981 098 452). Around 1986, LSE was formed as a joint venture between LTV and Sumatumo Metals, Inc. LSE operates a zinc electrogalvanizing operation. PRC did not inspect this facility because of its separate EPA identification number. A building located north of area B of the Landfill (SWMU 30) is leased to SLI (EPA ID No. OHD 982 209 108). Since 1988, SLI has transported slag generated from LTV blast furnaces to its processing facility. SLI crushes the slag and removes iron from the material, which is either returned to LTV's blast furnaces or sold off site. SLI has four air permits (Nos. 13-18-00-2662F001, 13-18-00-2662F002, 13-18-00-2662F003, and 13-18-00-2662F005). PRC did not inspect this facility because of its separate EPA ID number. Since the mid-1980s, the facility has leased an area north of the Landfill (SWMU 30) to Stein to reprocess slag. Stein has one NPDES permit (No. OHR001964) and three air permits (Nos. 13-18-00-3929F003, 13-18-00-3929F005, and 13-18-00-3929F006). PRC did not inspect the Stein area because LTV representatives indicated that Stein did not generate solid wastes.

2.5.2 Facility Inspections

On April 8, 1981, OEPA conducted a RCRA inspection at the facility. OEPA notified Republic of concerns identified during the inspection, which included several paperwork deficiencies. OEPA also notified Republic that its solvent recovery system (degreaser) was subject to RCRA storage requirements. OEPA did not require Republic to respond to the deficiencies noted (OEPA 1981).

On June 11, 1982, OEPA conducted a hazardous waste inspection at the facility and found the facility to be in compliance with federal and state regulations (OEPA 1982).

On August 9, 1982, EPA and OEPA entered a consent agreement and final order against the facility. Republic had submitted its Notification of Hazardous Waste Activity form on August 19, 1980, one day after the deadline date. As a result, the facility was ordered to cease all TSD activities not in compliance with 40 Code of Federal Regulations (CFR) 265 and comply with 40 CFR 122 and 124 as if it had filed the notification in a timely manner (EPA 1982).

On August 3, 1983, OEPA conducted a hazardous waste inspection at the facility and noted numerous violations. The violations cited inadequate waste container markings and that spent PCE (F001) generated at the electric shop was not included in the Part A permit application. The inspection also noted several paperwork deficiencies. OEPA advised the facility that the spent PCE burned at the Sludge Mill (SWMU 35) did not meet RCRA minimum British thermal unit (BTU) requirements for such disposal (OEPA 1983). The facility adequately responded to the violations on October 6, 1983, and ceased burning the spent PCE (Republic 1983).

On June 20, 1985, OEPA conducted a hazardous waste inspection at the facility and noted several violations, including numerous manifest violations; waste analysis plan deficiencies; and inadequate inspection documentation and procedures at the 98-Inch Line SPL Tanks (SWMU 1), 60-Inch Line Tanks (SWMU 2), and 84-Inch Line SPL Tanks (SWMU 3) (OEPA 1985). LTV responded to the violations on August 13, 1985 (LTV 1985b).

On June 3, 1986, OEPA conducted a hazardous waste inspection at the facility and noted numerous violations. OEPA noted that the facility failed to identify and permit the 15,000-gallon tank of the 60-Inch Line Tanks (SWMU 2) that had been storing SPL (K062) (OEPA 1986a). As noted in LTV's June 27, 1986, response, this is in error because the tank was on the revised permit of April 28, 1986 (LTV 1986b). In addition, OEPA notified the facility on June 3, 1986, that it was in violation of all applicable regulations pertaining to operating an unpermitted hazardous waste unit and that it would refer the facility to the OEPA Central District Office for enforcement action. In addition, the inspection noted the following violations: the receiving tank at the Sludge Mill (SWMU 35) had inadequate freeboard; the receiving tank's secondary containment berm had deteriorated, and coal tar decanter sludge (K087) appeared to have spilled over; inadequate inspection documentation and procedures at the containment sumps at the 60-Inch Line Tanks (SWMU 2) and at the 84-Inch Line SPL Tanks (SWMU 3); improper signs; and training record deficiencies (OEPA 1986a). LTV

responded to the unpermitted hazardous waste activity violations on June 27, 1986, and to the remaining violations on July 16, 1986 (LTV 1986b).

On May 28, 1987, OEPA conducted a hazardous waste inspection at the facility and noted several violations. OEPA found that the facility was not using current manifests and that its waste analysis plan did not include appropriate test methods for all hazardous waste streams (OEPA 1987a).

On April 28, 1988, OEPA conducted a hazardous waste inspection at the facility and found several violations. The violations included inadequate personnel training and inspection documentation (OEPA 1988). The inspection also included a land ban restriction inspection that was forwarded to EPA, who found the facility in compliance with the applicable regulations (EPA 1988b).

On August 28, 1989, EPA conducted a RCRA compliance inspection at the facility and found two violations relating to the burning of off-specification used oil. LTV purchases the oil from Research Oil and burns the oil as fuel in steel plant combustion facilities, which are industrial boilers as defined in 40 CFR 260.10. The analyses of used oil burned by the LTV facility contained levels of chlorine above the nonhazardous benchmark and was therefore, by the rebuttable presumption rule, presumed to be a hazardous waste fuel. In addition, the facility failed to keep certification notices from used oil fuel marketers for 3 years (EPA 1991). On April 5, 1991, LTV rebutted the presumption by providing analyses of the waste oil provided by Research Oil, the marketer of the used oil fuel (LTV 1991a).

On January 31 and February 1, 1991, OEPA conducted a RCRA compliance inspection at the facility and noted several violations. The violations included inadequate waste analysis plan, improper emergency equipment inspections, and failure to include notifications of treatment standards with waste shipments. In addition, OEPA inspectors observed a leak of the ancillary piping carrying wastes to the 84-Inch Line SPL Tanks (SWMU 3). The leak was located outside of the secondary containment system and appeared to have been leaking for a while. OEPA reviewed inspection sheets for the unit and found no documentation of the leaks. LTV was cited for not immediately removing from service the leaking portion of the tank system and for not initiating procedures to remediate the leak (OEPA 1991a).

On October 27, 1992, OEPA conducted a compliance evaluation inspection at the facility and noted numerous violations. These violations involved failure to include waste paint (D001) and waste chromic acid solution (D002 and D007) in the waste analysis plan and incorrect paperwork, manifests, and inspection procedures (OEPA 1992b). The facility responded to the violations on December 8, 1992 (LTV 1992).

On December 9, 1992, OEPA notified the facility of a NPDES permit violation that occurred on September 17, 1992. The violation was discovered when OEPA reviewed the facility's self-monitoring report for September. The violation was for exceeding permit limitations of total suspended solids allowed for outfall 002 (SWMU 29). OEPA directed the facility to proceed with its planned actions to prevent future occurrences (OEPA 1992c).

On February 2 and 3, 1993, OEPA conducted a compliance evaluation inspection of all WWTPs at the facility and noted numerous violations. These violations were based on observations that lead OEPA to conclude that discharge limitations had been exceeded at several NPDES-permitted outfalls (SWMU 29). Alleged violations that occurred at East Works outfalls are as follows: outfall 014 contained a high-solids discharge, and outfalls 002, 601, and 602, which are associated with the Strip Mill WWTP (SWMU 14), contained a high-solids and green-colored discharge. OEPA's review of monthly operating reports for 1992 indicate that the facility was in general compliance with effluent limitations of the NPDES permit except for the September 1992 violations stated earlier (OEPA 1993b). LTV responded to the violations on April 22, 1993, and refuted the violation allegations with results of outfall sampling conducted the day of the inspection (LTV 1993b).

On April 27, 1993, Enviroserve transported nine dumptruck loads of soil to the Kurtz Brothers Landfill in Cleveland, Ohio. Upon arrival, the soil was identified as tar-contaminated soil (K141), for which OEPA cited LTV for violation of solid waste disposal regulations. On April 28, Enviroserve segregated the waste and transported it to the Envirosafe landfill in Oregon, Ohio. OEPA also cited LTV for violation of state regulations requiring facilities to evaluate wastes prior to disposal (OEPA 1993d). On June 8, 1993, LTV responded to the violations. LTV refuted the K141 classification of the soil because no sampling was conducted to characterize the waste. LTV further stated that there was no evidence that the tar-like material was generated in a manner described in the federal definition of K141 waste (LTV 1993c).

2.5.3 Operating Permits

NPDES Permit No. 3ID00003*JD expired on October 1, 1992. LTV has a total of 17 outfalls that currently discharge directly to the Cuyahoga River. Outfalls 001, 003, 007, 015, 019, 021, 022, and 024 discharge combinations of the following: storm water runoff, groundwater, noncontact cooling water, and noncontact cooling overflows. Outfalls 002, 004, 005, 011, 014, 017, 027, 601, and 602 discharge combinations of the following: storm water runoff, groundwater, sanitary wastewater, noncontact cooling water, and treated process wastewater. Outfall 018 is used for discharge of process wastewater. Outfall 009 used to contain treated coke plant process wastewater, noncontact cooling water, storm water runoff, and groundwater. This outfall has been contaminated with wastes beyond the treated process wastewaters just mentioned and the permit contains a Best Management Program to address the problem. LTV planned to correct the situation by September 1993, but the coke plants were closed prior to this date (OEPA 1990b).

A 1986 Cuyahoga River study conducted by the National Wildlife Federation (NWF) identified water quality violations by Republic for lead, zinc, copper, chromium, and cadmium. In addition, the study reported that Republic discharged 10 percent of the magnesium, 99 percent of the cyanide (P030), 98 percent of phenols, and 24 percent of the chromium contributed to the Cuyahoga River system. NWF found that in 1984, the NPDES permits for the Republic facility had no limitations placed on the discharge of toxic materials. Based on Monthly Operating Report summaries for 1984, the constituents and levels of discharges were reported for the following outfalls: 002, 7.44 kilograms per day (kg/d) of cyanide (P030) and 5.03 kg/d of phenol; 003, 36.5 kg/d of cyanide and 19.02 kg/d phenol; 004, 9.21 kg/d of cyanide; and 005, 1.50 kg/d of lead and 6.67 kg/d of zinc. Data for outfall 001 (SWMU 29) was not available (NWF 1986).

Form 2C of the NPDES permit application submitted by Republic on April 27, 1981, indicates the following constituents and aggregate daily loads: iron at 28.63 kg/d, magnesium at 145.23 kg/d, chromium at 2.17 kg/d, lead at 1.63 kg/d, nickel at 1.23 kg/d, zinc at 7.52 kg/d, cyanide at 177.51 kg/d, phenols at 59.85 kg/d, ethylbenzene at 1.21 kg/d, PCE at 0.90 kg/d, and naphthalene at 6.22 kg/d (NWF 1986).

The LTV facility keeps track of 110 air permits, of which about 37 are currently active for ongoing operations. The remaining air permits are either awaiting issuance, on hold by the City of Cleveland, under registration status, or pending deletion from their system.

2.5.4 Underground Storage Tanks

The facility formerly had five USTs. On October 3, 1988, a 2,000-gallon steel diesel fuel UST was excavated in the vicinity of the Blast Furnace WWTP (SWMU 24). Research Oil pumped the remaining diesel fuel into a tanker truck and transported it to its reprocessing facility in Cleveland, Ohio, on September 29, 1988. LTV removed the tank and transported it to the Landfill (SWMU 30) where it was scrapped and, according to facility representatives, presumably became furnace charge material. The Cleveland Fire Department witnessed the removal, determined that no leakage or soil contamination had occurred, and approved the backfilling of the excavation area (City of Cleveland 1988).

On October 18, 1988, one 1,000-gallon steel diesel fuel tank was excavated from an ore dock area. On October 25, 1988, one 10,000-gallon steel diesel fuel tank and one 8,000-gallon steel diesel fuel tank were excavated from near the paint shop. Suburban Power Piping Corporation (SPP) was contracted to conduct the tank removals. Samsel Services (Samsel) of Cleveland, Ohio, transported all wastes generated from cleaning the tanks to Research Oil. LTV transported the tanks to Stein, where the tanks were scrapped. Local fire officials witnessed the removal and determined that no leakage or soil contamination occurred (SPP 1988).

In December 1988, Stevens Painton Corporation (Stevens) was contracted to empty, clean, leak test, and fill in place a 1,500-gallon steel diesel fuel tank located near the No. 2 BOF. All aboveground piping was scrapped for furnace charging. Samsel purged and washed the interior of the tank. All wash water was disposed of at the Strip Mill WWTP (SWMU 14). A local fire official inspected the tank and granted Stevens permission to fill the tank with concrete (Stevens 1989).

2.6 ENVIRONMENTAL SETTING

This section describes the climate; flood plain and surface water; geology and soils; and groundwater in the vicinity of the facility.

2.6.1 Climate

The climate in Cuyahoga County is classified as humid, temperate, and continental. Winds from Lake Erie tend to markedly lower the daily high temperature in summer. The average annual temperature is between 41.1 and 59.1 °F. The lowest average daily temperature is 19.5 °F in January. The highest average daily temperature is 82.4 °F in July (USDA 1980).

The average total annual precipitation for the county is 35.4 inches. From late fall through winter, total snowfall is normally heavy, with an average total snowfall of 52.5 inches (USDA 1980). Mean annual lake evaporation for the area is about 30 inches (DOC 1968). The 1-year, 24-hour maximum rainfall is about 2.25 inches (DOC 1963). The average relative humidity in midafternoon is about 60 percent. Humidity is higher at night, and the average at dawn is about 80 percent. Possible sunshine is 70 percent in summer and 30 percent in winter. Average wind speed is highest in January at about 13 miles per hour. Winds are predominantly off Lake Erie from the north (USDA 1980).

2.6.2 Flood Plain and Surface Water

The surface water body nearest to the LTV facility is the Cuyahoga River, which is located along the facility's western boundary. The Cuyahoga River is used for industrial and commercial purposes (ODNR 1953). The facility borders about 2.5 miles of the river. From the facility's northern boundary, the Cuyahoga River flows about 4.5 miles north to Lake Erie.

Burke Brook, also known as Burke Branch, enters a culvert east of the facility and flows beneath the facility into the Cuyahoga River (USGS 1963). Burke Brook has been replaced by culverts since the early 1900s. Slag backfill was used in the construction of the culvert. The brook flows directly beneath the Landfill (SWMU 30) with about 65 feet of slag fill separating the culvert from the existing landfilled waste (OEPA 1991b). Burke Brook is currently used for storm water runoff.

Lake Erie is located about 2.5 miles northwest of the facility. Lake Erie is the primary drinking water source in the vicinity of the facility. It is also used for commercial and recreational purposes (ODNR 1953).

Storm water runoff from the facility flows into storm water sewers that discharge through NPDES-permitted outfalls (SWMU 29) to the Cuyahoga River. Some facility floor drains are directed to these outfalls. Facility operations are located outside of any flood zone boundaries (FEMA 1978).

2.6.3 Geology and Soils

The soils of the entire facility consist of Urban Land. Urban Land is defined as areas where more than 80 percent of the surface is covered by asphalt, concrete, buildings, or other manmade surfaces. These areas are nearly level and gently sloping. Areas along the Cuyahoga River contain waste material from steel mills. Immediately adjacent to Urban Land soils east of the facility are Urban Land-Elnora Complex Series soils, which consist of deep, nearly level, moderately well drained Elnora soil. Typically, Elnora soil consists of loamy fine sand with a moderately rapid permeability and slow runoff. This soil series formed in sandy lacustrine material on low ridges on the lake plain and is typically between 32 and 60 inches deep (USDA 1980).

Fill material is prevalent across the facility. Boreholes developed by Republic in the vicinity of the Landfill (SWMU 30) revealed the presence of fill material composed of sand, silts, clay, slag, and mill scale waste ranging from 8 to 33 feet bgs. This material is loose to very loose, indicating high permeability (Republic 1979). The hydraulic conductivity of slag ranges from 1×10^{-1} to 1×10^{-3} centimeters per second (OEPA 1991b). Glacial unconsolidated material beneath the slag fill consists of laminated brown silty sands and stiff, silty clays (Republic 1979).

Underlying soils in the vicinity of the facility are thin, Wisconsinan-aged, lacustrine deposits. The material primarily consists of silt and fine sand laid down from glacial Lake Maumee, the predecessor to Lake Erie (ODNR 1982). Lacustrine deposits are thin in the vicinity of the facility (ODNR 1953). Along the Cuyahoga River, the unconsolidated material consists of alluvium, which is comprised of sand, silt, and gravel, in the buried Cuyahoga River valley (ODNR 1982). The thickness of the

glacial drift in the buried valley in the vicinity of the facility ranges from 35 to 300 feet bgs (ODNR 1953).

Devonian-aged bedrock underlies the glacial deposits. The bedrock consists of the thick Chagrin Shale Member of the Ohio Shale. The bedrock crops out beneath glacial drift in all of Cleveland (ODNR 1953). Boreholes developed by Republic in the vicinity of the Landfill (SWMU 30) indicate that the bedrock exhibits a downward easterly slope (Republic 1979). OEPA reports that the bedrock exhibits a downward southerly slope (OEPA 1991b).

2.6.4 Groundwater

The Wisconsinan-aged glacial deposits generally are poor sources of groundwater. Gravel and sand deposits are notably few in number and lack both the areal extent and the thickness necessary for the development of large water supplies. The thin and fine-grained lacustrine deposits are also unfavorable sources of groundwater. The glacial deposits in the buried Cuyahoga River valley yield almost no water; it is not uncommon for wells to penetrate the entire body of valley fill without encountering an aquifer. Wells have been developed into the shale bedrock and have been determined to be of poor water-bearing quality (ODNR 1953).

Groundwater flow in the lacustrine deposits appears to follow a pre-fill surface drainage pattern. Groundwater flow in the vicinity of area C of the Landfill (SWMU 30) is towards the center of the disposal area. Groundwater flow in the vicinity of area B of the Landfill (SWMU 30) is to the west except for the eastern half of the north mound, where groundwater flows east (OEPA 1991b).

However, a sand lens exists beneath part of area C of the Landfill (SWMU 30). This sand lens is 1 to 7 feet thick and about 15 feet bgs. According to OEPA, the groundwater flow direction in the sand lens is to the center of area C, and the sand lens is hydraulically connected with fluvial deposits of Burke Brook. OEPA considers the fluvial deposits to be a preferential flow path away from the Landfill (SWMU 30). In addition, an on-site culvert is hydraulically connected to the fluvial deposits by concrete pipe drains that were installed every 500 feet of the culvert. OEPA has determined that either a significant zone of saturation or an uppermost aquifer system exists in the fluvial deposits and

slag backfill in the vicinity of the Landfill (SWMU 30). No information is available on the groundwater's contribution to total culvert flow (OEPA 1991b).

Although groundwater in the vicinity of the facility is primarily in the bedrock aquifers, they do not produce much water. Shallow aquifers may exist as confined areas of sand located within the unconsolidated layers. Based on well logs in the vicinity of the facility, no shallow aquifers exist, and groundwater is not available in sufficient quantities up to depths of 100 feet bgs (ODNR 1953). Based on boreholes developed by Republic, perched water zones exist within the manmade fill material that is prevalent across the facility property (Republic 1979).

Bedrock aquifers in the area are a poor source of groundwater. Groundwater flow in the bedrock aquifer is not known. However, groundwater flow most likely follows the topography of the area towards the north (ODNR 1953; USGS 1963).

The consolidated material in the area of the facility consists of sandstone and shale. Sandstone is the better aquifer because of its greater porosity and permeability (ODNR 1953).

2.7 RECEPTORS

The City of Cleveland obtains its water supply from Lake Erie through intake cribs located about 4 miles from shore and over 8 miles downstream of the facility. The Cleveland municipal water supply system serves almost all of Cuyahoga County, Ohio (ODNR 1953). The Cuyahoga River is used by the facility for cooling water.

As early as 1868, the *Cleveland Plain Dealer* newspaper describes a red and iridescent scum from iron mills and petroleum refineries polluting the water at the mouth of the Cuyahoga River. A 1968 report by the U.S. Department of the Interior on the condition of Lake Erie cites Republic Steel and Jones and Laughlin Steel (the predecessor to LTV) as the second and fifth largest producers of industrial waste discharged into a tributary of Lake Erie. Data collected by EPA from Waste Load Permit Application forms cite the facility operating as Republic as contributing 8,540 pounds per day of waste loading into the Cuyahoga River in 1970, and about 9,990 pounds per day in 1973 (EPA 1975).

Materials piles such as iron ore, scrap, and coal, may contribute to increased levels of suspended solids in storm water runoff. Currently, the Landfill (SWMU 30) and the coal piles have storm water runoff diversion structures installed to mitigate this effect. However, during the VSI, PRC observed an ubiquitous, dark black mud with an oily sheen. Near the C2 and C4 blast furnaces, runoff of this material was observed entering a storm water sewer that discharges directly to the river through NPDES-permitted Outfall (SWMU 29) 014.

Wind direction is primarily south and southeast; therefore, residential areas in these directions are most likely to be affected by airborne pollutants. During the VSI, a bypass blow off valve at the No. 3 powerhouse caused a particulate fallout on the PRC inspection team.

The nearest residences are located along the eastern boundary of the facility property. The nearest school is located about 0.5 mile east of the No. 1 steel mill. The entire facility is enclosed by a combination of fences and building walls. In addition, several security cameras are placed throughout the facility, and facility grounds are patrolled by 24-hour security guards. Truck entrances have gates and a guard, and railroad lines entering the property are controlled with gates.

Some surface soil is present at the facility along portions of the coke oven gas line and some railroad spurs. The majority of the facility is however primarily covered by steel-derived slag and fine coal and metallic dust material. Contamination of soils is dependent on the permeability of this overlying fill material.

No sensitive environments exist within a 4-mile radius of the facility.

3.0 SOLID WASTE MANAGEMENT UNITS

This section describes the 39 SWMUs identified during the PA/VSI. The following information is presented for each SWMU: description of the unit, dates of operation, wastes managed, release controls, history of documented releases, and PRC's observations. Figure 2 shows the SWMU locations.

SWMU 1 **98-Inch Line Spent Pickle Liquor (SPL) Tanks**

Unit Description: This unit consisted of three 25,000-gallon, rubber-lined steel tanks located on a bermed concrete pad. The tanks were roughly situated end-to-end and collected SPL generated from the 98-inch rolling mill pickling activities when it was operating. The tanks were located on the east side of the former 98-inch rolling mill (now the L-S Electroplating Company [LSE] building).

Date of Startup: This unit is estimated to have begun operation in the early 1960s.

Date of Closure: The tanks ceased operation in July 1984. The unit's RCRA closure was approved by OEPA on February 14, 1989, and by EPA on March 6, 1989. The tanks were removed in September 1992.

Wastes Managed: This unit managed SPL (K062). The typical composition of the waste was 0.5 to 10 percent free hydrochloric acid, 20 to 25 percent ferrous chloride, and 70 to 75 percent water.

Release Controls: The tanks were mounted on a sealed and coated, bermed concrete pad within a roofed building. Two sumps were located at the east end of the building to collect spilled material and pipe it back into the tanks (B&N 1987). At the time of closure, the berm was cracked in six locations, some of the floor coating had peeled away, the metal framework of the sump tops had deteriorated, and the ends of metal

tank support beams had deteriorated. However, no evidence of a release was observed outside of the unit, and no reported concrete degradation or pitting was observed (LTV 1987a).

History of Documented Releases: No evidence of tank overflows has been documented. Some evidence of small leaks at the transfer pumps located between two of the tanks have been reported; however, the pumps were located within the secondary containment area. No deterioration of the floor beneath the transfer pumps was reported (B&N 1988d).

Observations: At the time of the VSI, the unit was no longer present at the facility. It was formerly located on the east side of the current LSE building. The area is currently paved with asphalt (see Photograph No. 1).

SWMU 2 **60-Inch Line Tanks**

Unit Description: This unit consists of one elevated, 8,000-gallon, rubber-lined steel tank; and one upright, 15,000-gallon, fiberglass-reinforced plastic tank. Both tanks are within a concrete secondary containment area. The unit is located outdoors on the east side of the 60-inch hot rolling mill.

Date of Startup: This unit is estimated to have begun operation in the early 1970s.

Date of Closure: This unit is currently being used for less than 90-day storage and is undergoing RCRA closure activities.

Wastes Managed: The steel tank is currently used for less than 90-day storage of SPL (K062). The fiberglass tank is currently used for less than 90-day storage of waste chromic acid (D002 and D007). These wastes are generated from pickling and electroplating operations.

Release Controls:

Both tanks are within a bermed, concrete, secondary containment area. The secondary containment area measures about 30 yards long by 12 yards deep, and is about 2 feet high at the center and one foot high at the ends. The floor of the secondary containment area has been recently coated with an acid-resistant sealer.

History of Documented Releases:

In June 1990, the facility discovered a failure in an expansion joint in the floor of the unit's secondary containment area. Although samples taken from the soil beneath the failed joint did not conclusively indicate a release from the containment area, LTV proposed to replace the failed joint and to take additional samples at that time. LTV then prepared a modified closure plan (LTV 1991b). In January 1992, the facility submitted to OEPA an amended closure plan. On September 20, 1993, OEPA disapproved the closure plan (OEPA 1993e). This closure plan is currently pending approval by OEPA, and the status of the subsurface soil contamination is under investigation.

Observations:

The two tanks were observed to be operating (see Photograph No. 2). At the time of the VSI, piping outside of the tanks within the secondary containment area were leaking (see Photograph No. 3). The liquid remained within the secondary containment area. Representatives thought the leak contained a mixture of acid and water. The exterior sides of the berm at the north end and in the center of the secondary containment area is crumbling (see Photograph No. 2). A drain is located next to the building outside of the north end of the secondary containment area. Representatives stated the drain flows to the Strip Mill Wastewater Treatment Plant (WWTP) (SWMU 14).

SWMU 3	**84-Inch Line SPL Tanks**
Unit Description:	This unit consists of two elevated, 25,000-gallon, fiberglass-reinforced plastic tanks. The tanks are mounted below two hydrochloric acid raw material tanks of identical construction. All four tanks are mounted within a bermed secondary containment area. The tanks are located outdoors on the east side of the 84-inch rolling mill. A sloped, recessed loading and unloading dock is located east of the unit and contains a drain and a sump. The sump is connected to one of the waste tanks.
Date of Startup:	This unit is estimated to have begun operation in the early 1960s.
Date of Closure:	This unit is currently being used for less than 90-day storage. OEPA approved closure of this unit in October 1990.
Wastes Managed:	This unit stores SPL (K062) generated from pickling activities at the 84-inch rolling mill for less than 90 days.
Release Controls:	All the tanks have a bermed secondary containment structure 17 inches thick and constructed of an acid-resistant brick lining with sealed joints over a bituminous layer. The floor is constructed of acid-resistant brick. The secondary containment area measures about 40 yards long by 5 feet deep. A sloped, recessed loading and unloading dock is located east of the unit and contains a drain and a sump. The sump is located at the north end of the dock and is connected to the northern waste tank.
History of Documented Releases:	An OEPA inspection in February 1991 revealed that piping carrying wastes to this unit leaked. The leak was located outside the secondary

containment area, most likely on the pavement or asphalt that surrounds the unit (OEPA 1991a).

Observations: The tanks are supported by a steel structure (see Photograph No. 4). The exterior side of the berm at the northeast end of the secondary containment area is crumbling. No drains, except for the sump in the dock area, were observed in the vicinity of this unit.

SWMU 4 **Degreaser Sludge Container**

Unit Description: This unit consisted of a 529-gallon steel dumpster with a lid located outdoors on slag on the east side of the electric repair shop. This unit was used to store degreaser sludge (F001), still bottoms (F001), and spent PCE (F001) generated from a degreaser and solvent recovery still located inside the electric repair shop.

Date of Startup: This unit began operation in the early 1970s.

Date of Closure: This unit ceased operation in 1988 and was replaced by the Degreaser Drum Storage Area (SWMU 5). This unit is currently undergoing RCRA closure.

Wastes Managed: This unit was used to store degreaser sludge (F001), spent PCE (F001), and still bottoms (F001) generated from a degreaser and solvent recovery still located inside the electric repair shop.

Release Controls: This unit was stored closed. No other release controls were provided for this unit.

History of Documented Releases: During closure activities, soil contamination was identified and three MWs were installed. Soil sampling in early 1993 around the unit

	identified about 9,000 cubic yards of soil contaminated by 5 to 10 pounds of PCE. As of March 1993, groundwater samples collected from the Groundwater and Soil in the Area of MW 1 (AOC 3) contained 1 to 2 ppm of PCE, trace amounts of TCE, and trace amounts of unspecified chlorinated compounds. The source of the groundwater contamination has been concluded to be the unsaturated soil identified during the closure of the unit (OEPA 1993c).
Observations:	At the time of the VSI, the ground in the area of the unit was covered with slag. PRC observed one MW (see Photograph No. 5).
SWMU 5	**Degreaser Drum Storage Area**
Unit Description:	This unit consists of a raised concrete slab measuring about 10 feet by 10 feet by 5 inches located outdoors on the east side of the electric repair shop and about 50 feet south of the Degreaser Sludge Container (SWMU 4).
Date of Startup:	This unit began operation in 1988, when it replaced the Degreaser Sludge Container (SWMU 4).
Date of Closure:	This unit is currently active for less than 90-day storage of still bottoms (F001), degreaser sludge (F001), and spent PCE (F001).
Wastes Managed:	This unit is used to store still bottoms (F001), degreaser sludge (F001), and spent PCE (F001) generated from a solvent recovery still and degreaser located inside the electric repair shop.
Release Controls:	Drums at this unit are stored closed on a concrete pad. No other release controls are present at this unit.

History of Documented Releases: No releases from this unit have been documented.

Observations: At the time of the VSI, three 55-gallon drums of spent PCE and three empty drums were stored at the unit. The unit is located next to a parking lot with no barriers between the unit and the parking lot. The concrete slab is eroding on the parking lot side (see Photograph No. 6).

SWMU 6 **Paint Shop Drum Storage Area**

Unit Description: This unit consists of a 5-foot by 4-foot fiberboard slab placed on slag-covered ground. This unit is located outdoors on the south side of the paint shop.

Date of Startup: This unit began operation in 1990. The paint shop began operations in 1965, but no information is available on how wastes were handled between 1965 and 1990.

Date of Closure: The unit is currently active for less than 90-day storage of waste paint (D001) and spent solvents (D001).

Wastes Managed: This unit manages waste paint (D001) and spent solvents (D001) generated from painting and brush-cleaning activities at the facility's paint shop.

Release Controls: This unit has no release controls.

History of Documented Releases: At the time of the VSI, yellow, black, and blue paint was observed on the slag-covered ground of this unit. Grey paint streaks were also observed on the building wall next to the unit.

Observations:	At the time of the VSI, two empty 55-gallon drums were stored at this unit. PRC observed yellow, black, and blue paint on the slag covering the ground near this unit. In addition, grey paint streaks the color of dirty paint brush cleaner and paint brush dab marks were observed on the exterior wall adjacent to this unit. The paint streaks flow down the wall to a drain, which representatives described as a "French curtain drain" (see Photograph No. 7).
SWMU 7	**Precipitators**
Unit Description:	This unit consisted of nine electrostatic precipitators originally installed as air pollution control devices at the basic oxygen furnaces (BOF) (which had four), ladle metallurgical facility (LMF), and each blast furnace. All but one of the precipitators were converted into Baghouses (SWMU 9) between 1977 and 1982. The remaining precipitator, located at a BOF, was taken out of service in the early 1980s and has not been used since.
Date of Startup:	This unit was originally installed in 1965.
Date of Closure:	This unit was converted into Baghouses (SWMU 9) between 1977 and 1982. One BOF precipitator remains at the facility and has not been used since the early 1980s.
Wastes Managed:	This unit managed BOF baghouse dust (D008 and Bevill) and nonhazardous blast furnace dry dust. Wastes were transferred to the Silos (SWMU 10) and the BOF Silos (SWMU 11) by screw conveyors. The wastes were disposed of in the Landfill (SWMU 30).
Release Controls:	This unit was enclosed. No further information is available on other release controls.

History of Documented Releases:	No releases from this unit have been documented.
Observations:	At the time of the VSI, eight of the precipitators included in this unit had been converted into Baghouses (SWMU 9) (see Photograph No. 9). The remaining precipitator is not in service.
SWMU 8	**No. 1 Powerhouse Precipitator**
Unit Description:	This unit was an electrostatic precipitator installed as an air pollution control device for the No. 1 powerhouse.
Date of Startup:	This unit began operation in the late 1970s.
Date of Closure:	This unit ceased operation in the late 1980s, when the powerhouse converted from coal-fired to natural gas-fired boilers.
Wastes Managed:	This unit managed nonhazardous flyash from coal-fired boilers. A vacuum system transferred flyash in this unit to a Silo (SWMU 10) prior to off-site disposal.
Release Controls:	This unit had no known release controls.
History of Documented Releases:	No releases from this unit have been documented.
Observations:	At the time of the VSI, this unit was inactive (see Photograph No. 8).

SWMU 9	**Baghouses**
Unit Description:	Of the nine former Precipitators (SWMU 7), this unit consists of the following eight baghouses: three BOFs, the LMF, and four blast furnaces. The conversion occurred between 1977 and 1982.
Date of Startup:	The former Precipitators (SWMU 7) were gradually converted into Baghouses between 1977 and 1982.
Date of Closure:	Only one BOF, the LMF, C5 blast furnace, and C6 blast furnace baghouses are currently active. The other baghouses ceased operations in the 1980s.
Wastes Managed:	This unit manages nonhazardous blast furnace dry dust. The BOF unit manages BOF baghouse dust (D008 and Bevill). Wastes are transferred to either Silos (SWMU 10) or the BOF Silo (SWMU 11) using a screw system.
Release Controls:	This unit is enclosed and situated on asphalt or concrete.
History of Documented Releases:	No releases from this unit have been documented.
Observations:	PRC observed this unit and it appeared to be in good condition with no evidence of release (see Photograph No. 9). This unit looked similar to the No. 1 Powerhouse Precipitator (SWMU 8).
SWMU 10	**Silos**
Unit Description:	This unit consists of the following six silos: the LMF; C2, C4, C5, and C6 blast furnaces; and the No. 1 powerhouse. This unit is located

	outdoors and constructed of cinderblock. The elevated silos have a capacity of 8,000 cubic feet each.
Date of Startup:	This unit began operation in the late 1970s and early 1980s as the Precipitators (SWMU 7) were converted to Baghouses (SWMU 9).
Date of Closure:	The C2 and C4 blast furnace silos ceased operations in 1979. The No. 1 powerhouse silo ceased operations in the late 1980s. All other silos are currently active at the facility.
Wastes Managed:	This unit manages blast furnace dry dust (nonhazardous and Bevill). Former units managed nonhazardous flyash from the No. 1 powerhouse and blast furnace dry dust generated from blast furnaces. Past and current wastes have all been disposed of in the Landfill (SWMU 30).
Release Controls:	The units are situated on asphalt and concrete and manage nonhazardous wastes.
History of Documented Releases:	No releases from this unit have been documented.
Observations:	PRC could not determine if a release had occurred at the currently operating unit. No releases appeared to have occurred at the inactive units (see Photograph No. 8).
SWMU 11	**BOF Silos**
Unit Description:	This unit consists of three silos located at BOFs. This unit is located outdoors and constructed of cinderblock or concrete. The elevated silos have a capacity of 8,000 cubic feet each.

Date of Startup:	This unit began operation in the late 1970s and early 1980s as the Precipitators (SWMU 7) were converted to Baghouses (SWMU 9).
Date of Closure:	Only the No. 2 BOF is currently active. The other BOF silos ceased operations in the 1980s.
Wastes Managed:	This unit managed BOF baghouse dust (D008 and Bevill). Prior to 1987, this waste was disposed of in the Landfill (SWMU 30). Since 1987, this waste has been disposed of off site.
Release Controls:	This unit had no known release controls. The chute of the No. 2 BOF silo is connected to closed-hopper disposal trucks during evacuation to prevent the release of dust to the air.
History of Documented Releases:	No releases from this unit have been documented.
Observations:	PRC observed the active unit, which was constructed of concrete, and it appeared to be in good condition (see Photograph No. 10).

SWMU 12 **Blast Furnace Dry Dust Collectors**

Unit Description: This unit consists of four collectors. Two former collectors were located by the C2 and C4 blast furnaces. Two collectors are currently operating at the C5 and C6 blast furnaces. The collectors consist of a concrete pad situated beneath a Silo (SWMU 10) located outdoors by each blast furnace. The concrete pads measured about 20 feet in diameter. Blast furnace dry dust is collected in the Silo (SWMU 10) until it is about half full and then dumped on a concrete pad. The dust is loaded into facility trucks on a continuous basis to transport the waste to the Landfill (SWMU 30).

Date of Startup:	The first collector began operation in the 1920s at the C2 and C4 blast furnaces. As additional blast furnaces came on line, more collectors began operation.
Date of Closure:	Two collectors are currently operating at the C5 and C6 blast furnaces. The collector at the C2 and C4 blast furnaces ceased operations in 1979.
Wastes Managed:	The unit manages nonhazardous blast furnace dry dust (Bevill).
Release Controls:	The collectors at the C2 and C4 blast furnaces have a concrete floor but are outdoors. No other release controls exist at these collectors. The collectors at the C5 and C6 blast furnaces are somewhat enclosed within a courtyard-like area and have an asphalt floor. No bare ground is in the vicinity of the C5 and C6 blast furnace collectors.
History of Documented Releases:	No releases from this unit have been documented.
Observations:	The collectors at the C2 and C4 blast furnaces were no longer operating during the VSI (see Photographs No. 11 and 12). The roadway and much of the ground in the vicinity of these blast furnaces was covered with a black, shiny dust that turned to into mud in wet areas. A trench located 12 yards west of the unit flows to outfall 014. At the time of the VSI, water containing an oily sheen was flowing into the trench (see Photograph No. 13). The units at the operating blast furnaces, C5 and C6, were in good condition and no nearby drains were present. The areas were clean, with no evidence of dry dust dispersal. No photograph was taken of this unit because of the lack of light in these somewhat enclosed areas.

SWMU 13	**Rolling Mill Scale Pit**
Unit Description:	This unit is located in the 84-inch rolling mill building basement. The concrete pit runs beneath the length of the rolling train, which is about 0.25 mile long, and collects water used in the rolling process. The water is piped directly to the Strip Mill WWTP (SWMU 14).
Date of Startup:	This unit began operation in the late 1960s.
Date of Closure:	This unit is currently active.
Wastes Managed:	This unit manages nonhazardous 84-inch mill wastewater used to cool and lubricate hot slabs rolled along the rolling train. The wastewater contains scale removed from the slab. The water is piped directly to the Strip Mill WWTP (SWMU 14).
Release Controls:	This unit is maintained indoors and manages nonhazardous process wastewater containing scale.
History of Documented Releases:	No releases from this unit have been documented.
Observations:	PRC was unable to observe or photograph this unit because it is located beneath the rolling train. PRC observed process water flowing into the unit, and determined that the unit receives nonhazardous wastewater.
SWMU 14	**Strip Mill WWTP**
Unit Description:	This unit consists of four aboveground, about 3 million-gallon, steel clarifiers; chemical treatment tanks; and a vacuum filter for dewatering sludge. Other SWMUs associated with this unit include

	the Oil and Water Separator (SWMU 15), Strip Mill Used Oil Tanks (SWMU 16), Strip Mill Sludge Accumulation Area (SWMU 17), and Strip Mill Lagoon (SWMU 18). This unit treats wastewaters generated at the 84-inch mill, cold-rolling mill, 60-inch mill, and LSE building. Treated wastewaters flow to the Strip Mill Lagoon (SWMU 18) prior to discharge to the Cuyahoga River through NPDES-permitted outfall 002 (SWMU 29).
Date of Startup:	This unit began operation in 1969.
Date of Closure:	This unit is currently active.
Wastes Managed:	This unit treats 84-inch mill wastewaters, 60-inch mill wastewaters, and LSE wastewaters. These wastewaters contain SPL (K062) and nonhazardous used oil. Treated wastewaters are discharged to the Cuyahoga River through NPDES-permitted outfall 002 (SWMU 29).
Release Controls:	The treatment system is maintained indoors on concrete floors.
History of Documented Releases:	No releases from this unit have been documented.
Observations:	At the time of the VSI, the unit was operating. No foul odors were detected. Photographs were taken of the other SWMUs associated with this WWTP (see below). No leaks from system piping were observed.
SWMU 15	**Oil and Water Separator**
Unit Description:	This unit consists of two 100,000-gallon steel, unlined tanks. Water-soluble oil enters the wastewater stream from the finishing lines of the cold rolling mill. The nonhazardous used oil is drawn off the top of

	the wastewater by drum skimmers on both tanks and piped directly to the Strip Mill Used Oil Tanks (SWMU 16). The wastewater is treated in the Strip Mill WWTP (SWMU 14) prior to discharge to the Cuyahoga River through outfall 002 (SWMU 29).
Date of Startup:	This unit began operation in 1969.
Date of Closure:	This unit is currently active.
Wastes Managed:	This unit manages nonhazardous wastewater containing water-soluble used oil generated from the finishing lines of the cold rolling mill.
Release Controls:	The unit has an automatic level indicator to prevent overflow.
History of Documented Releases:	No releases from this unit have been documented.
Observations:	At the time of the VSI, this unit was active (see Photograph No. 14). The unit appeared to be in good working condition.
SWMU 16	**Strip Mill Used Oil Tanks**
Unit Description:	This unit consists of two 16,500-gallon, unlined steel tanks within one secondary containment area. The floor slopes to a drain in the center of the area, which flows back into the Oil and Water Separator (SWMU 15). This unit is located outdoors on the northwest side of the Strip Mill WWTP (SWMU 14).
Date of Startup:	This unit began operation in 1969.
Date of Closure:	This unit is currently active.

Wastes Managed:	This unit manages nonhazardous water-soluble used oil. The tanks are pumped directly into tanker trucks, and the oil is recycled off site.
Release Controls:	The secondary containment area contains a berm about 30 feet by 30 feet by one foot high. The floor is coated with an epoxy coating and slopes to a drain in the center of the area. This drain flows back into the Oil and Water Separator (SWMU 15).
History of Documented Releases:	No releases from this unit have been documented.
Observations:	During the VSI, the area around the unit appeared to be in good condition, with no evidence of spills. The hose used to empty the tanks extends outside of the secondary containment area. A 5-gallon bucket is located under the transfer pipe and hose to catch leaks at the connection (see Photograph No. 15). The drain in the center of the unit also appeared clean. PRC observed gaps in the expansion joints at the southwest corner of the secondary containment berm.
SWMU 17	**Strip Mill Sludge Accumulation Area**
Unit Description:	This unit consists of a 400-square-foot asphalt area with concrete walls situated beneath a conveyor belt. The conveyor belt transfers dewatered sludge from the vacuum filter of the Strip Mill WWTP (SWMU 14) to this unit. The unit is located outdoors on the north side of the Strip Mill WWTP (SWMU 14).
Date of Startup:	This unit began operation in 1969.
Date of Closure:	This unit is currently active.

Wastes Managed:	This unit manages nonhazardous wastewater treatment sludge generated from the Strip Mill WWTP (SWMU 14). To further stabilize the sludge, it is mixed with nonhazardous blast furnace dry dust prior to on-site disposal. In the past, nonhazardous flyash was sometimes mixed with the sludge at this unit prior to on-site disposal. The sludge is disposed of in area C of the Landfill (SWMU 30).
Release Controls:	The unit has an asphalt floor with no nearby drains. The unit manages nonhazardous wastewater treatment sludge mixed with blast furnace dry dust.
History of Documented Releases:	No releases from this unit have been documented.
Observations:	At the time of the VSI, this unit was active. A light brown sludge was being accumulated at this unit. A large amount of blast furnace dry dust was piled outside and in front of the unit (see Photograph No. 16). No foul odors were detected.

SWMU 18 **Strip Mill Lagoon**

Unit Description:	This unit is a below grade surface impoundment that measures about 54,000 square feet and is about 10 feet deep. This unit was once the stream bed of the Cuyahoga River and was constructed from a diversion of the river. As a result, the unit is unlined and has the original river channel as its bottom.
Date of Startup:	This unit began operation in 1965.
Date of Closure:	This unit is currently active.

Wastes Managed:	This unit manages cooling recirculation water. Prior to 1969, this unit managed untreated nonhazardous 84-inch mill wastewater and accumulated nonhazardous scale. Nonhazardous lagoon solids are dredged from the unit about once every 10 years and disposed of on site at the Landfill (SWMU 30).
Release Controls:	The unit is unlined.
History of Documented Releases:	No releases from this unit have been documented.
Observations:	PRC identified this unit while reviewing documents during the PA. However, PRC did not observe or take photographs of this unit because it was inadvertently excluded from a list of units to inspect during the VSI.

SWMU 19 **LMF WWTP**

Unit Description:	This unit is located in the LMF inside the north end of the steel plant. It is equipped with a vacuum degasser; two aboveground, about 140,000-gallon, steel clarifiers; and a filter press. The treatment process elevates the pH of wastewater to precipitate zinc solids in the wastewater. The zinc settles out in the clarifiers. The clarifiers are pumped to the filter press, which dewaters the solids and dumps them into the LMF Sludge Dumpsters (SWMU 20). The water is discharged to the Steel Plant WWTP (SWMU 21).
Date of Startup:	This unit began operation in 1990.
Date of Closure:	This unit is currently active.

Release Controls:	The unit is maintained indoors on concrete floors. No floor drains are present in the vicinity of the unit. The unit is plastic-lined and covered when not in use.
History of Documented Releases:	No releases from this unit have been documented.
Observations:	At the time of the VSI, the LMF WWTP (SWMU 19) was not active. One roll-off dumpster was empty and the other was about one-eighth full. The dumpsters are plastic-lined and were stored covered (see Photograph No. 17).
SWMU 21	**Steel Plant WWTP**
Unit Description:	This unit consists of a wastewater treatment system; two aboveground, about 1.5-million-gallon, steel clarifiers; and a vacuum filter. The unit is located adjacent to the Cuyahoga River west of the steel plant. This plant primarily treats scale water. Scales collect in the clarifiers. The solids are pumped from the clarifiers and mixed with solids collected from clarifiers at the Suppressed Combustion WWTP (SWMU 23). The sludge is dewatered in the vacuum filter and dumped onto the Steel Plant Sludge Accumulation Area (SWMU 22). Treated wastewater is discharged to the Cuyahoga River via NPDES-permitted Outfall (SWMU 29) 017.
Date of Startup:	This unit began operation in the mid-1970s.
Date of Closure:	This unit is currently active.
Wastes Managed:	This unit currently treats steel mill wastewaters generated from the continuous caster, which contains scale. The unit also treats discharges from the LMF WWTP (SWMU 19) and storm water runoff

Wastes Managed:	This unit manages nonhazardous steel mill wastewaters generated from scrubbing primary gases from the steel plant. Zinc is a primary component of the wastes managed at this unit. Zinc-bearing solids are filter pressed and dumped into the LMF Sludge Dumpsters (SWMU 20). Water is discharged to the Steel Plant WWTP (SWMU 21).
Release Controls:	This unit in maintained in a building on concrete floors.
History of Documented Releases:	No releases from this unit have been documented.
Observations:	At the time of the VSI, this unit was inactive. The WWTP looked new, clean, and well maintained. No photograph was taken because facility representatives considered the unit to be proprietary.
SWMU 20	**LMF Sludge Dumpsters**
Unit Description:	This unit consists of two 10-cubic yard, plastic-lined roll-off dumpsters. The dumpsters are located indoors on concrete floors below the filter press of the LMF WWTP (SWMU 19). The units are covered with a plastic tarpaulin when not in use.
Date of Startup:	This unit began operation in 1990.
Date of Closure:	This unit is currently active.
Wastes Managed:	This unit stores LMF WWTP sludge (D006 and D008) for less than 90 days. The wastes contain zinc and lead. The lead is believed to come from scrap metals. The wastes are landfilled off site.

collected from storm water sewers, which collect rainwater from the steel mill area including property and building roofs. Prior to dewatering at the vacuum filter, WWTP sludge in this unit is mixed with WWTP sludge from the Suppressed Combustion WWTP (SWMU 23). The WWTP sludge is then placed in the Steel Plant Sludge Accumulation Area (SWMU 22), and treated water is discharged to the Cuyahoga River through NPDES-permitted outfall 017 (SWMU 29).

Release Controls: This unit is maintained indoors and treats nonhazardous wastewaters.

History of Documented Releases: No releases from this unit have been documented.

Observations: At the time of the VSI, this unit was not active. Limited daylight prevented the inspection team from taking a photograph. The unit appears to be identical to the Blast Furnace WWTP (SWMU 24).

SWMU 22 **Steel Plant Sludge Accumulation Area**

Unit Description: This unit consists of an approximately 100-square-foot concrete pad. It is located outdoors beneath the vacuum filter of the Steel Plant WWTP (SWMU 21).

Date of Startup: This unit began operation in the mid-1970s.

Date of Closure: This unit is currently active.

Wastes Managed: This unit manages nonhazardous wastewater treatment sludges that fall below the maximum allowable concentration for classification as a Class III Residual Wastes. The WWTP sludges are generated from the Steel Plant WWTP (SWMU 21) and Suppressed Combustion

	WWTP (SWMU 23). The nonhazardous WWTP sludge is disposed of on site at the Landfill (SWMU 30).
Release Controls:	The unit manages nonhazardous wastes outdoors and has a concrete floor.
History of Documented Releases:	No releases from this unit have been documented.
Observations:	At the time of the VSI, this unit was not active. Limited daylight prevented the inspection team from taking a photograph. The unit appears to be identical to the Former Blast Furnace Sludge Accumulation Area (SWMU 27).
SWMU 23	**Suppressed Combustion WWTP**
Unit Description:	This unit consists of a wastewater treatment system and two aboveground, about 1.5-million-gallon, steel clarifiers. This unit is maintained indoors on concrete floors north of the Steel Plant WWTP (SWMU 21). This unit treats wastewater from scrubbed gas from primary air emissions generated at the steel plant. Solids collect in the clarifiers and are pumped from the clarifiers and mixed with solids from the Steel Plant WWTP (SWMU 21). The sludge are dewatered in the vacuum filter and dumped at the Steel Plant Sludge Accumulation Area (SWMU 22). Treated wastewater is discharged to the Cuyahoga River through NPDES-permitted outfall (SWMU 29) 018.
Date of Startup:	This unit began operation in 1977.
Date of Closure:	This unit is currently active.

Wastes Managed:	This unit treats wastewaters from gas cleaning scrubbers from primary air emissions at the steel plant. The sludges fall below the maximum allowable concentration for classification as a Class III Residual Wastes. This nonhazardous wastewater treatment sludge is dewatered at the Steel Plant WWTP (SWMU 21) and accumulated in the Steel Plant Sludge Accumulation Area (SWMU 22). Treated wastewater is discharged to the Cuyahoga River through NPDES-permitted outfall 018.
Release Controls:	This unit is maintained indoors on concrete floors and manages nonhazardous wastes.
History of Documented Releases:	No releases from this unit have been documented.
Observations:	At the time of the VSI, this unit was shut down for maintenance. This unit appeared to be identical to the Steel Plant WWTP (SWMU 21). Limited daylight prevented the inspection team from taking a photograph.
SWMU 24	**Blast Furnace WWTP**
Unit Description:	This unit consists of a wastewater treatment system; two aboveground, about 1.5-million-gallon, steel clarifiers; and a vacuum filter. This unit is maintained indoors on concrete floors south of the C5 blast furnace. This WWTP treats wastewater from scrubbed gas from emissions generated at the C6 and C7 blast furnaces. Sludge collects in the clarifiers. The sludge is pumped from the clarifiers, dewatered in the vacuum filter, and dumped at the Blast Furnace Sludge Accumulation Area (SWMU 25). Treated wastewaters are discharged to the Cuyahoga River through NPDES-permitted outfall 604 (SWMU 29).

Date of Startup:	This unit began operation in the mid-1960s.
Date of Closure:	This unit is currently active.
Wastes Managed:	This unit treats wastewaters from gas cleaning scrubbers of emissions at the C6 and C7 blast furnaces. This unit generates nonhazardous WWTP sludges that fall below the maximum allowable concentration for classification as a Class III Residual Wastes. Sludge collected in the clarifiers is dewatered in a vacuum filter. The WWTP sludge is accumulated in the Blast Furnace Sludge Accumulation Area (SWMU 25). Treated wastewater is discharged to the Cuyahoga River through NPDES-permitted outfall 604.
Release Controls:	This unit is maintained indoors on concrete floors and handles nonhazardous wastewaters.
History of Documented Releases:	No releases from this unit have been documented.
Observations:	At the time of the VSI, this unit was operating. PRC observed the unit to be well maintained with no evidence of release. No room was available to take an informative photograph.
SWMU 25	**Blast Furnace Sludge Accumulation Area**
Unit Description:	This unit consists of an approximately 200 square-foot concrete pad. It is located outdoors beneath the vacuum filter of the Blast Furnace WWTP (SWMU 24). The unit is enclosed on three sides, and accessible from the front.
Date of Startup:	This unit began operation in the mid-1960s.

Date of Closure:	This unit is currently active.
Wastes Managed:	This unit manages nonhazardous wastewater treatment sludges that fall below the maximum allowable concentration for classification as a Class III Residual Wastes. The sludges are generated from the Blast Furnace WWTP (SWMU 24). The sludge is disposed of on-site at the Landfill (SWMU 30).
Release Controls:	This unit is maintained on concrete and is enclosed on three sides.
History of Documented Releases:	No releases from this unit have been documented.
Observations:	At the time of the VSI, nonhazardous wastewater treatment sludge was rapidly accumulating at this unit (see Photograph No. 18). A storm water sewer was observed about 25 feet south of the pile. This storm water sewer discharges to the Cuyahoga River through NPDES-permitted outfall 005 (SWMU 29).
SWMU 26	**Former Blast Furnace WWTP**
Unit Description:	This former unit consisted of a wastewater treatment system; three aboveground, about 1.5-million-gallon, steel clarifiers; and a vacuum filter. This unit was maintained indoors on concrete floors south of the C4 blast furnace, and treated wastewater from scrubbed gas from emissions generated at the C2 and C4 blast furnaces. Sludge was collected in the clarifiers.
Date of Startup:	This unit began operation in the 1970s.
Date of Closure:	This unit ceased operation in 1990.

Wastes Managed:	This unit was used to treat wastewaters from gas scrubbing of emissions at the C2 and C4 blast furnaces. The nonhazardous WWTP sludges fell below the maximum allowable concentration for classification as a Class III Residual Wastes. Sludge was accumulated in the Former Blast Furnace Sludge Accumulation Area (SWMU 27). Treated wastewaters were discharged to the Cuyahoga River through NPDES-permitted outfall 605.
Release Controls:	This unit was maintained indoors on concrete floors and managed nonhazardous wastewaters.
History of Documented Releases:	No releases from this unit have been documented.
Observations:	At the time of the VSI, this unit was no longer operating. The WWTP was deteriorating and in poor condition. PRC photographed the clarifiers of this unit, but the photographs did not provide a meaningful perspective of the unit and are not included in the report.
SWMU 27	**Former Blast Furnace Sludge Accumulation Area**
Unit Description:	This unit consisted of an approximately 200 square-foot concrete pad. It was located beneath the vacuum filter of the Former Blast Furnace WWTP (SWMU 26). The unit was enclosed on two sides and accessible from the front and back.
Date of Startup:	This unit began operation in the 1970s.
Date of Closure:	This unit ceased operation in 1990.
Wastes Managed:	This unit managed nonhazardous wastewater treatment sludges that fell below the maximum allowable concentration for classification as a

Class III Residual Wastes. The sludges were generated from the Former Blast Furnace WWTP (SWMU 26). The sludge was disposed of on site at the Landfill (SWMU 30).

Release Controls: This unit had a concrete floor and was enclosed on two sides. This unit managed nonhazardous wastewater treatment sludge. No storm water sewers or drains are located near this unit.

History of Documented Releases: No releases from this unit have been documented.

Observations: At the time of the VSI, this unit was no longer operating. No wastes were stored at the unit (see Photograph No. 19). No drains or storm water sewers were observed near this unit.

SWMU 28 **Coke Plant WWTP**

Unit Description: This former unit consisted of a wastewater treatment system and a sump, and was maintained indoors on concrete floors. The unit is located at the east end of the No. 1 coke plant and treated the condensate (liquid phase) of the coke oven gases from both coke plants. Sludges were collected in the sump, which was a 10-foot deep, 2-foot wide concrete pit. No further information is available on the description of this unit.

Date of Startup: This unit began operation in 1977.

Date of Closure: This unit ceased operation in 1991.

Wastes Managed: This unit treated the condensate (liquid phase) of the coke oven gases from both coke plants. The condensate contained ammonia, phenol (P048), and cyanide (P030). Sludges were collected in the sump and

	pumped directly into a tanker truck and disposed of at the Landfill (SWMU 30). Treated wastewaters were discharged to the Cuyahoga River through NPDES-permitted outfall 009 (SWMU 29).
Release Controls:	This unit was maintained indoors on concrete floors.
History of Documented Releases:	No releases from this unit have been documented.
Observations:	At the time of the VSI, this unit was no longer operating. The building had no electricity, and the inspection team could therefore not observe or photograph the deep interior of this unit or the sump. The building containing the unit was dilapidated.
SWMU 29	**Storm Sewer System and Outfalls**
Unit Description:	This unit consists of the storm sewer system and the 17 currently NPDES-permitted outfalls to the Cuyahoga River for the facility. The storm sewer system collects storm water runoff from facility property and building roofs and discharges it to the Cuyahoga River through NPDES-permitted outfalls.
Date of Startup:	Storm sewers and outfalls have been used since the facility began operations in the late 1800s. As the facility expanded, additional sewers and outfalls were added. The outfalls became permitted under NPDES in the early 1980s.
Date of Closure:	Seventeen storm sewer outfalls are currently active. Outfalls 606, 609, 610, 007, and 009, associated with the coke plants, will be removed from the permit renewal.

Wastes Managed: The storm sewers carry storm water runoff from the facility to the outfalls, which also discharge treated wastewater effluent, runoff, groundwater, noncontact cooling water, sanitary wastewater, cooling water, process water overflow, and filter blowdown to the Cuyahoga River.

Release Controls: The storm sewers are designed to collect storm water runoff. A few outfalls have effluent limitations, but the majority have monitor only status.

History of Documented Releases: On November 3, 1993, about 50 gallons of dephenolized liquids entered storm sewers in the vicinity of the Coke Plant WWTP (SWMU 28) from one of the outfalls. Prior to the early 1960s, untreated process waters were discharged directly to the Cuyahoga River.

Observations: PRC observed outfall 005 during the VSI. Water was pouring out of the outfall at a high rate (see Photograph No. 20). This outfall discharges water from the C5 and C6 blast furnace sewers. PRC observed the ground in the vicinity of the C2 and C4 blast furnaces was covered with a black, shiny dust that turned to into mud in wet areas. A trench located 12 yards west of the unit flows to the Storm Sewer System and Outfalls (SWMU 29) outfall 014. PRC observed water containing an oily sheen flowing into the trench (see Photograph No. 13).

SWMU 30 **Landfill**

Unit Description: This unit covers about 53 acres and is comprised of two regulated landfill areas within an overall filled area. Area B consists of two landfill mounds covering about 15 acres that have been capped and no

longer receive wastes. Area C covers about 22 acres and is currently active for landfilling wastewater treatment sludges and blast furnace dry dust. The facility is planning to expand area C in the future. The remaining 10 acres consist of miscellaneous fill and waste materials that have been disposed of in this area over the lifetime of the facility.

Date of Startup:

Area B of the Landfill began operation in the mid-1960s. Area C began operations in the 1970s. The entire area, however, has been used for facility wastes since operations began at the facility.

Date of Closure:

Area B is currently undergoing closure as a landfill. Area C is still active.

Wastes Managed:

Area B consists of a north mound and a south mound. Precipitator particulates were disposed of in the north mound. Slag fines, demolition debris, and precipitator particulates were disposed of in the south mound. Wastewater treatment sludges and blast furnace dry dust (Bevill), lagoon solids, and scale are disposed of in area C. BOF baghouse dust (D008 and Bevill) was disposed of in this unit before the lead content increased to a point that warranted off-site disposal as a hazardous waste. No information is available confirming if heavy metals were disposed of in this unit. Prior to regulating this unit as a landfill, former facility operators disposed of unknown quantities of various wastes, including those mentioned above and coal tar decanter sludge (K087) in this unit. These wastes were not specifically disposed of in the landfill but were unloaded from dumptrucks and spread around the 53 acres with bulldozers.

Release Controls:

Since the unit became a permitted waste disposal facility in the mid-1960s, this unit has disposed of nonhazardous wastes only. Several storm water runoff ponds have been installed. The unit has no liner and is constructed on slag material in many areas.

History of Documented Releases: Around September 1992, LTV encountered a layer of tar-like material while excavating a runoff pond No. 4 near area C of the Landfill (SWMU 30). OEPA determined that the waste was coal tar decanter sludge (K087) generated from coke plant operations during the 1950s. The material tested hazardous for pyridine and benzene. Approximately 400 cubic yards of the sludge-contaminated soils (K141) were excavated and stored at the Tar Sludge Staging Area (SWMU 32). Groundwater was sampled and found to contain ammonia, benzene, chloride, and cyanide (P030). On April 13, 1993, about 30 tons of tar-contaminated soil (K141) was excavated near area C of the Landfill (SWMU 30) while constructing storm water runoff pond No. 3.

Observations: Both mounds of area B were capped, seeded, and appeared to be in good condition (see Photographs No. 21 and 22). Area C was active and receiving dumptruck loads of wastes. The slopes were black and susceptible to erosion (see Photograph No. 23). The ground around this area consisted of slag material, and no plant life was observed anywhere.

SWMU 31 **Demolition Debris Staging Area**

Unit Description: This unit consists of slag material on the ground in the area of the Landfill (SWMU 30) south of area B. Piles of demolition debris from unused buildings and structures are staged here prior to off-site disposal at a municipal landfill.

Date of Startup: This unit began operation in 1988.

Date of Closure: This unit is currently active.

Wastes Managed:	This unit manages nonhazardous demolition debris from buildings and structures no longer in use. The debris is placed here and segregated prior to off-site disposal at a municipal landfill. Steel materials are scrapped and used as steelmaking charge.
Release Controls:	This unit has no release controls.
History of Documented Releases:	No releases from this unit have been documented.
Observations:	At the time of the VSI, about four different piles were observed (see Photograph No. 24). The piles are placed directly on the slag-covered ground without a liner.

SWMU 32 **Tar Sludge Staging Area**

Unit Description:	In September 1992, during excavation to construct a storm water runoff diversion pond, coal tar decanter sludge (K087) was encountered. The soil tested hazardous for pyridine and benzene and was placed in a 400 cubic-yard pile at this unit. OEPA did not consider the soil pile to be a waste pile. The facility segregated the hazardous waste from the soil, and on December 2, 1992, placed the material into dumpsters located in this area.
Date of Startup:	This unit began operation in September 1992.
Date of Closure:	This unit ceased operation in December 1992.
Wastes Managed:	Approximately 400 cubic yards of the coal tar decanter sludge-contaminated soils was excavated and stored at this unit. OEPA determined that the waste was coal tar decanter sludge (K087)

	generated from coke plant operations during the 1950s. The material tested hazardous for pyridine and benzene.
Release Controls:	The soil pile was originally placed directly on the ground before being placed in dumpsters. The dumpsters were stored on slag material that comprises the ground cover in this area of the Landfill (SWMU 30). No liners were used.
History of Documented Releases:	No releases have been documented from this unit.
Observations:	At the time of the VSI, this unit was no longer being used. PRC did not observe any staining of the slag-covered ground near the unit (see Photograph No. 25).
SWMU 33	**Desulfurization Tank**
Unit Description:	This unit desulfurized coke oven gas and consisted of a 410-gallon, concrete UST.
Date of Startup:	This unit began operation in 1979.
Date of Closure:	This unit ceased operation in January 1991.
Wastes Managed:	This unit managed nonhazardous desulfurization liquor.
Release Controls:	This unit was equipped with overflow alarms. No information is available on whether the unit was leak tested.
History of Documented Releases:	No releases from this unit have been documented.

Observations:	At the time of the VSI, this unit was no longer operating, and portions of the desulfurization plant were being demolished (see Photograph No. 26).
SWMU 34	**Coal Tar Dumpsters**
Unit Description:	This unit consisted of three 440-gallon steel rolling dumpsters. The dumpsters were placed beneath the discharge chutes of the coal tar decanter.
Date of Startup:	This unit began operation in 1979.
Date of Closure:	This unit ceased operation at the No. 1 coke plant in 1991 and at the No. 2 coke plant in 1992.
Wastes Managed:	The dumpsters were placed beneath the discharge chutes of the coal tar decanter to accumulate coal tar decanter sludge (K087). The dumpsters were transported to the Sludge Mill (SWMU 35), where the waste was recycled in the coke ovens.
Release Controls:	The units were maintained on concrete during filling. The unit at the No. 2 coke plant was equipped with a berm.
History of Documented Releases:	No releases from this unit have been documented.
Observations:	At the time of the VSI, this unit was not present at the facility. PRC observed the former locations (see Photograph No. 27).

SWMU 35	**Sludge Mill**
Unit Description:	This unit consisted of a 3,070-gallon receiving steel tank, screw augers, and conveyor belts located in a somewhat enclosed area on the southeast side of the No. 2 coke plant.
Date of Startup:	This unit began operation in 1979.
Date of Closure:	This unit ceased operation in 1992.
Wastes Managed:	This unit managed coal tar decanter sludge (K087). Waste was brought to this unit in Coal Tar Dumpsters (SWMU 34) and dumped into the receiving tank. The screw augers carried the sludge to a system of conveyor belts transporting coal to be fed into the coke ovens. The sludge was dropped onto the conveyor belt and recycled into the coke ovens with the coal.
Release Controls:	This unit had no known release controls.
History of Documented Releases:	No releases from this unit have been documented.
Observations:	At the time of the VSI, this unit was no longer operating. The unit was almost completely demolished (see Photograph No. 28).
SWMU 36	**Coke Oven Gas Drip Legs**
Unit Description:	The coke oven gas line traversed the property between the No. 1 coke plant, past the No. 2 coke plant, to the 60-inch hot rolling mill and cold rolling mill. The line is about 1.5 miles long and has a diameter of about 3 feet. The gas line had 75 drip legs designed to bleed off condensate that accumulated in the gas line. This unit discharged the

	condensate directly onto the ground. The coke oven gas line now carries natural gas.
Date of Startup:	This unit began operation in about 1915.
Date of Closure:	This unit ceased operation in the late 1980s.
Wastes Managed:	From about 1915 to the late 1980s, the unit discharged coke oven gas line drippings containing ammonia, cyanide (P030), and phenol (P048) directly onto the ground. The coke oven gas line now carries natural gas.
Release Controls:	This unit had no release controls until the Coke Oven Gas Drip Boxes (SWMU 37) were constructed in the mid-1970s and the Coke Oven Gas Drip Tanks (SWMU 38) were constructed in 1977.
History of Documented Releases:	Between about 1915 and the mid-1970s, coke oven gas condensate containing ammonia, phenols (P048), cyanide (P030), and oil was discharged directly onto the ground from the 75 drip legs along the coke oven gas line. Between the mid-1970s and 1977, some of the condensate was directed through the Coke Oven Gas Drip Boxes (SWMU 37) prior to discharge directly onto the ground.
Observations:	Much of the property along the length of the coke oven gas line is paved or covered with slag material. PRC observed soil mixed with slag at one point along the gas line (see Photograph No. 29). No plant life was observed in the vicinity of the drip legs. This area is located about 20 yards from the Cuyahoga River.

SWMU 37	**Coke Oven Gas Drip Boxes**
Unit Description:	This unit consisted of about 25 300-gallon steel boxes, each equipped with a baffle and weir. These units were placed at some of the Coke Oven Gas Drip Legs (SWMU 36) along the length of the coke oven gas line. The units drew off oil entrained in the gas line condensate. The oil was reclaimed, and the remaining liquid was allowed to spill over onto the ground. These units were replaced by the Coke Oven Gas Drip Tanks (SWMU 38).
Date of Startup:	This unit began operation in the mid-1970s.
Date of Closure:	This unit ceased operation in 1976.
Wastes Managed:	The boxes managed nonhazardous coke oven gas line drippings and separated oil from the liquid. The constituents of this condensate were ammonia, cyanide (P030), and phenol (P048). The oil was reclaimed off site, and the liquid was allowed to overflow onto the ground.
Release Controls:	These units had no release controls.
History of Documented Releases:	Between the mid-1970s and 1976, coke oven gas condensate containing ammonia, phenols (P048), and cyanide (P030) was discharged directly onto the ground from this unit.
Observations:	At the time of the VSI, the unit was no longer being used. The boxes were not identified until the inspection team discovered one of them while investigating the Coke Oven Gas Drip Legs (SWMU 36). The boxes appeared in extremely poor condition (see Photograph No. 29).

SWMU 38	**Coke Oven Gas Drip Tanks**
Unit Description:	This former unit consisted of 25 steel, unlined tanks ranging from 200 to 5,000 gallons in capacity. Each tank had a concrete secondary containment area equal to 110 percent the volume of the tank. Twenty-five of these units were located along the coke oven gas line, some of which replaced the Coke Oven Drip Legs (SWMU 36) and the Coke Oven Gas Drip Boxes (SWMU 37). These tanks were installed to end the practice of bleeding the Coke Oven Gas Drip Legs (SWMU 36) directly onto the ground, and any remaining Coke Oven Drip Legs (SWMU 36) were plugged.
Date of Startup:	This unit began operation in the late 1980s.
Date of Closure:	This unit ceased operation in 1991.
Wastes Managed:	These tanks managed coke oven gas line condensate. The constituents of this condensate were ammonia, cyanide (P030), and phenol (P048). LTV pumped out the tank contents into a tanker truck and transported the waste liquid to the Coke Plant WWTP (SWMU 28) for treatment.
Release Controls:	The tanks had concrete secondary containment structures equal to 110 percent of each tank's volume. Piping ran directly from the coke oven gas line to the tanks.
History of Documented Releases:	No releases from this unit have been documented.
Observations:	At the time of the VSI, these units were no longer being used. The tanks were in poor condition, with evidence of overfill (see Photograph No. 30). The secondary containment areas observed by PRC were in good condition, and most of them were full of water.

SWMU 39	**Former PCB Storage Area**
Unit Description:	This temporary unit consisted of a 30- by 15-foot concrete, bermed pad inside a building northeast of the Landfill (SWMU 30). This unit was used to store drummed PCBs generated by a program designed to reduce the amount of PCBs in the hydraulic systems.
Date of Startup:	This unit began operation around 1979.
Date of Closure:	This unit ceased operation around 1981.
Wastes Managed:	This unit managed PCBs in 55-gallon and 30-gallon steel drums. The drummed wastes were transported off site and incinerated.
Release Controls:	A 1981 EPA inspection of this area determined that the area was properly posted, isolated, sheltered from the weather, and diked. The EPA inspection also noted that the diked area met all containment volume and curbing requirements, and no drums were observed to have been leaking.
History of Documented Releases:	No releases from this unit have been documented.
Observations:	At the time of the VSI, the unit was no longer being used. The building in which this unit was maintained was dilapidated and scheduled for demolition. PRC could not inspect the unit closely because of poor building condition was a safety problem (see Photograph No. 31).

4.0 AREAS OF CONCERN

PRC identified three AOCs during the PA/VSI. These AOCs are discussed below; their locations are shown in Figure 2.

AOC 1 **Groundwater in the Area of MW 5**

This AOC is located on the north side of area C of the Landfill (SWMU 30) (see Photograph No. 32). Between June and October 1992, OEPA conducted five groundwater sampling events at MW 5 and identified 680 mg/L of ammonia, 720 µg/L of iron, and 310 mg/L of sulfate. OEPA concluded that the high ammonia concentration suggests a release to groundwater from a high-ammonia source. OEPA recommended performing an assessment to determine the rate, extent, concentration, and source of the ammonia contamination.

AOC 2 **Groundwater in the Area of MW 53**

This AOC is located at the northwest corner of area B of the Landfill (SWMU 30) (see Photograph No. 33). Groundwater sampling at the well identified the following contaminants: 9,000 µg/L of benzene; 7.2 mg/L of ammonia; 550 mg/L of chloride; and 0.18 mg/L of cyanide. OEPA concluded that the high benzene concentrations were above background levels and MCLs of 5 µg/L. OEPA recommended performing an assessment to determine the rate, extent, concentration, and source of the benzene contamination.

AOC 3 **Groundwater and Soil in the Area of MW 1**

This AOC is located in the area of the former Degreaser Sludge Container (SWMU 4) (see Photograph No. 5). Groundwater sampling at the well identified 1 to 2 ppm of PCE, trace amounts of TCE, and trace amounts of unspecified chlorinated compounds. The source of the groundwater contamination has been concluded to be the PCE-contaminated unsaturated soil around SWMU 4.

5.0 CONCLUSIONS AND RECOMMENDATIONS

The PA/VSI identified 39 SWMUs and 3 AOCs at the LTV facility. Background information on the facility's location; operations; waste generating processes and waste management practices; history of documented releases; regulatory history; environmental setting; and receptors is presented in Section 2.0. SWMU-specific information, such as the unit's description, dates of operation, wastes managed, release controls, history of documented releases, and observed condition, is presented in Section 3.0. AOCs are discussed in Section 4.0. Following are PRC's conclusions and recommendations for each SWMU and AOC. Table 3, located at the end of this section, summarizes the SWMUs and AOCs at the facility and the recommended further actions.

SWMU 1 **98-Inch Line SPL Tanks**

Conclusions: Between the early 1960s and July 1984, this unit managed spent hydrochloric acid, also known as SPL (K062). This unit was RCRA closed in 1989. No releases from this unit have been documented. The potential for release to all environmental media is low because the unit no longer exists at the facility.

Recommendations: PRC recommends no further action for this SWMU at this time.

SWMU 2 **60-Inch Line Tanks**

Conclusions: Since the early 1970s, this unit has stored SPL (K062) in the steel tank of the unit and spent chromic acid (D002 and D007) in the fiberglass tank of the unit. This unit is currently undergoing RCRA closure activities. Soil contamination is presumed to have occurred but it has not yet been specifically identified. The secondary containment area's floor has been fixed and coated. During the VSI, PRC observed a leak in the piping within the secondary containment area. The potential for release to environmental media is summarized below.

Groundwater: The potential for release is moderate because subsurface soil contamination may exist. The geology of the area consists of silty clay deposits with some sand and gravel lenses. In addition, the majority of the facility property has been filled with slag material.

Surface water: The potential for release is low because drains near the unit flow towards the Strip Mill WWTP (SWMU 14). No overland route from the unit to surface water bodies exists.

Air: The potential for release is moderate because at the time of the VSI, a leak in the unit's piping was observed. Waste was accumulating in the secondary containment area.

On-site soils: A release has occurred. PRC observed the secondary containment area's berm to be in poor condition. A leak in the unit's piping was observed, and wastes were accumulating in the secondary containment area.

Recommendations: PRC recommends that the facility repair the berm of the secondary containment area and repair the unit's piping. PRC also recommends that the facility complete closure activities prescribed by OEPA.

SWMU 3 **84-Inch Line SPL Tanks**

Conclusions: Since the early 1960s, this unit has managed SPL (K062) generated from pickling activities at the 84-inch rolling mill. This unit was approved as RCRA-closed by OEPA in 1990. A leak in the unit's piping located outside the secondary containment area was observed in 1991. The potential for release to environmental media is summarized below.

Groundwater, surface water, and on-site soils: The potential for release is moderate because of past spills at the unit. However, the unit is currently constructed to contain spills and prevent future releases.

Air: The potential for release is moderate because the unit is located outdoors, and contained spills have occurred in the past.

Recommendations: PRC recommends that the facility repair the berm of the secondary containment area where it is crumbling.

SWMU 4 **Degreaser Sludge Container**

Conclusions: Between the early 1970s and 1988, this unit was used to store degreaser sludge (F001), spent PCE (F001), and still bottoms (F001). Soil sampling in the area of the SWMU identified PCE contamination. Groundwater sampling identified PCE, TCE, and unspecified chlorinated compounds contamination. OEPA concluded that the source of the groundwater contamination was the contaminated unsaturated soil near the unit. This soil remains on site. The potential for release to environmental media is summarized below.

Groundwater and on-site soils: A release of PCE (F001) from this former unit has occurred.

Surface water: The potential for release is low because the unit is no longer active and contamination is confined to subsurface soils and groundwater.

Air: The potential for release is high and air stripping has been proposed to remediate the soil that is contaminated with volatile organic compounds.

Recommendations: PRC recommends that the facility complete closure and remedial activities prescribed by OEPA.

SWMU 5 **Degreaser Drum Storage Area**

Conclusions: Since 1988, this unit has been used to store degreaser sludge (F001), spent PCE (F001), and still bottoms (F001). No releases from this unit have been documented. The potential for release to environmental media is summarized below.

Groundwater, air, and on-site soils: The potential for release is moderate because the unit is maintained close to a traffic area of a parking lot. No barriers are present to prevent vehicles from contacting drums stored in this unit. No secondary containment structures exist to prevent spills from releasing to groundwater, air, or on-site soils.

Surface water: The potential for release is low because no overland route to storm sewers or surface water bodies exists.

Recommendations: PRC recommends that the facility construct secondary containment to prevent releases to groundwater, air, and on-site soils.

SWMU 6 **Paint Shop Drum Storage Area**

Conclusions: Since the early 1970s, this unit has been used to manage waste paint (D001) and spent solvents (F003, F005, and D001). During the VSI, paint spills were observed on the ground near this unit. This unit has no release controls. The potential for release to environmental media is summarized below.

Groundwater, air, and on-site soils: The potential for release is high. Spills have been observed at this unit. A french curtain drain is located next to this unit that may act as a direct conduit to groundwater. Paint stains on the building wall near this unit imply past releases of volatile organic compounds to the air. Slag material on the ground is relatively permeable and would not prevent releases to on-site soils.

Surface water: The potential for release is low because no overland route to storm sewers or surface water body exists.

Recommendations: PRC recommends that the facility improve its waste handling practices at this unit. PRC also recommends that the facility construct a secondary containment structure to prevent releases to groundwater and on-site soils.

SWMU 7 **Precipitators**

Conclusions: Between 1965 and 1982, this unit was used to nonhazardous precipitator particulates and BOF dust (D008 and Bevill). No releases from this unit have been documented. The potential for release to all environmental media is low because precipitators have been converted into Baghouses (SWMU 9).

Recommendations: PRC recommends no further action for this SWMU at this time.

SWMU 8 **No. 1 Powerhouse Precipitator**

Conclusions: Between the late 1970s and the late 1980s, this unit was used to manage nonhazardous flyash from coal-fired boilers. No releases from this unit have been documented. The potential for release to all environmental media is low because the unit no longer exists on site and formerly managed nonhazardous flyash.

Recommendations: PRC recommends no further action for this SWMU at this time.

SWMU 9 **Baghouses**

Conclusions: Since 1977, this unit has been used to accumulate BOF dust (D008 and Bevill) and nonhazardous blast furnace dry dust and particulates. The unit baghouses were converted from Precipitators (SWMU 7). No releases from this unit have been documented. The potential for release to all environmental media

is low because the unit transfers wastes to either the Silos (SWMU 10) or the BOF Silos (SWMU 11) through an enclosed screw system.

Recommendations: PRC recommends no further action for this SWMU at this time.

SWMU 10 **Silos**

Conclusions: Since the late 1970s, the unit has been used to store nonhazardous blast furnace dry dust and precipitator particulates accumulated in Baghouses (SWMU 9). No releases from this unit have been documented. The potential for release to all environmental media is low because waste management practices at the silos minimize the potential for release.

Recommendations: PRC recommends no further action for this SWMU at this time.

SWMU 11 **BOF Silos**

Conclusions: Since the late 1970s, this unit has been used to store BOF dust (D008 and Bevill) accumulated in Baghouses (SWMU 9) of the BOFs. The potential for release to all environmental media is low because waste management practices at the silos minimize the potential for release.

Recommendations: PRC recommends no further action for this SWMU at this time.

SWMU 12 **Blast Furnace Dry Dust Collectors**

Conclusions: Since the 1920s, these collectors have been used to collect nonhazardous blast furnace dry dust, an exempted Bevill waste. No releases from this unit have been documented. Only two collectors are currently active at the facility. The potential for release to environmental media is summarized below.

Groundwater and surface water: The potential for release is low because the unit manages nonhazardous, nonaqueous waste on concrete or asphalt.

Air and on-site soils: The potential for release is moderate because the unit is maintained outdoors with few barriers to the wind. The past potential for release from the two currently nonoperational collectors was high because the collectors also had no wind barriers. Wind-blown particulates would result in a release to on-site soils.

Recommendations: PRC recommends that the facility construct walls around the collectors to reduce the potential for releases to the air and on-site soils.

SWMU 13 **Rolling Mill Scale Pit**

Conclusions: Since the 1960s, this unit has been used to collect nonhazardous process wastewater containing scale. The wastewater is piped directly to the Strip Mill WWTP (SWMU 14). No releases from this unit have been documented. The potential for release to all environmental media is low because this unit is maintained indoors and manages nonhazardous waste.

Recommendations: PRC recommends no further action for this SWMU at this time.

SWMU 14 **Strip Mill WWTP**

Conclusions: Since 1969, this unit has treated wastewaters containing scale, water-soluble oil, SPL (K062), and other wastewaters. No releases from this unit have been documented. The potential for release to all environmental media is low because this unit is maintained indoors.

Recommendations: PRC recommends no further action for this SWMU at this time.

SWMU 15 **Oil and Water Separator**

Conclusions: Since 1969, this unit has been used to manage nonhazardous wastewater containing water-soluble oil. No releases from this unit have been documented. The potential for release to all environmental media is low because this unit is in good condition and manages nonhazardous oily wastewater.

Recommendations: PRC recommends no further action for this SWMU at this time.

SWMU 16 **Strip Mill Used Oil Tanks**

Conclusions: Since 1969, this unit has stored nonhazardous, water-soluble oil. No releases from this unit have been documented. The potential for release to all environmental media is low because this unit is constructed to contain spills.

Recommendations: PRC recommends no further action for this SWMU at this time.

SWMU 17 **Strip Mill Sludge Accumulation Area**

Conclusions: Since 1969, this unit has been used to accumulate wastewater treatment sludge. The sludge is mixed with blast furnace dry dust prior to disposal. No releases from this unit have been documented. The potential for release to all environmental media is low because this unit is constructed to contain spills and manages nonhazardous sludge.

Recommendations: PRC recommends no further action for this SWMU at this time.

SWMU 18 **Strip Mill Lagoon**

Conclusions: Since 1965, this unit has been used to manage treated wastewater from the Strip Mill WWTP (SWMU 14). This unit is unlined and is used to settle out

any solids in the wastewater. No releases from this unit have been documented. The potential for release to all environmental media is low because the unit manages nonhazardous treated wastewater. No further information is available on the constituents of the sludge and wastewater.

Recommendations: PRC recommends no further action for this SWMU at this time.

SWMU 19 **LMF WWTP**

Conclusions: Since 1990, this unit has treated zinc-bearing wastewaters from the scrubbing of steel plant primary gases. No releases from this unit have been documented. The potential for release to all environmental media is low because this unit is maintained indoors.

Recommendations: PRC recommends no further action for this SWMU at this time.

SWMU 20 **LMF Sludge Dumpsters**

Conclusions: Since 1990, this unit has been used to accumulate LMF wastewater treatment sludge (D006 and D008). No releases from this unit have been documented. The potential for release to all environmental media is low because this unit is maintained indoors.

Recommendations: PRC recommends no further action for this SWMU at this time.

SWMU 21 **Steel Plant WWTP**

Conclusions: Since the mid-1970s, this unit has been used to treat nonhazardous wastewater from the steel plant. No releases from this unit have been documented. The potential for release to all environmental media is low because this unit is maintained indoors.

Recommendations: PRC recommends no further action for this SWMU at this time.

SWMU 22 **Steel Plant Sludge Accumulation Area**

Conclusions: Since the mid-1970s, this unit has been used to accumulate nonhazardous wastewater treatment sludge. No releases from this unit have been documented. The potential for release to all environmental media is low because this unit manages nonhazardous wastes on a concrete pad.

Recommendations: PRC recommends no further action for this SWMU at this time.

SWMU 23 **Suppressed Combustion WWTP**

Conclusions: Since 1977, this unit has treated wastewater from the scrubbed gases of steel plant primary emissions. This unit is maintained indoors on concrete floors. No releases from this unit have been documented. The potential for release to all environmental media is therefore low.

Recommendations: PRC recommends no further action for this SWMU at this time.

SWMU 24 **Blast Furnace WWTP**

Conclusions: Since the mid-1960s, this unit has treated wastewater from scrubbed gas from blast furnace emissions. This unit is maintained indoors on concrete floors. No releases from this unit have been documented. The potential for release to all environmental media is low because this unit is maintained indoors.

Recommendations: PRC recommends no further action for this SWMU at this time.

SWMU 25 **Blast Furnace Sludge Accumulation Area**

Conclusions: Since the mid-1960s, this unit has been used to accumulate nonhazardous wastewater treatment sludge on a concrete floor. No releases from this unit have been documented. The potential for release to environmental media is summarized below.

Groundwater and on-site soils: The potential for release is low because this unit is situated on a concrete floor with no exposed areas.

Surface water: The potential for release is moderate because the paved area in front of this unit slopes to a storm water sewer that discharges to the Cuyahoga River through NPDES-permitted Outfall (SWMU 29) 005.

Air: The potential for release is low because this unit stores damp sludge and is enclosed on three sides.

Recommendations: PRC recommends the facility construct a berm for the unit to prevent releases to the storm water sewer.

SWMU 26 **Former Blast Furnace WWTP**

Conclusions: Between the 1970s and 1990, this unit was used to treat wastewater from gas scrubbing. This unit was maintained indoors on concrete floors. No releases from this unit have been documented. The potential for release to all environmental media is low because this unit no longer exists at the facility. The past potential for releases was also low because the unit was maintained indoors.

Recommendations: PRC recommends no further action for this SWMU at this time.

SWMU 27 **Former Blast Furnace Sludge Accumulation Area**

Conclusions: Between the 1970s and 1990, this unit accumulated nonhazardous wastewater treatment sludge. No releases from this unit have been documented. The potential for release to all environmental media is low because the unit is no longer active.

Recommendations: PRC recommends no further action for this SWMU at this time.

SWMU 28 **Coke Plant WWTP**

Conclusions: Between 1977 and 1991, this unit treated coke oven gas condensate containing ammonia, phenol (P048), and cyanide (P030). This unit was maintained indoors on concrete floors. No releases from this unit have been documented. The potential for release to all environmental media is low because this unit is no longer active.

Recommendations: PRC recommends no further action for this SWMU at this time.

SWMU 29 **Storm Water Sewer System and Outfalls**

Conclusions: The facility currently has 17 permitted outfalls to the Cuyahoga River. Prior to the early 1960s, untreated facility effluents were discharged directly to the river. Since the early 1960s, these outfalls have been permitted to discharge treated wastewater effluent, storm water runoff, noncontact cooling water, sewage, sewer overflow, and filter blowdown. Numerous permit violations have occurred at the facility. Prior to the early 1960s, untreated wastes were discharged directly to the Cuyahoga River. The potential for release to environmental media is summarized below.

Groundwater, air, and on-site soils: The potential for release is low because the outfalls are constructed of concrete, and no leaks are known to exist.

Surface water: The potential for release is high because the outfalls discharge directly to the Cuyahoga River. Spills that enter facility storm water sewers could discharge directly to the river. Releases from areas connected to the units could also be discharged directly to the river. The past potential for release was high because untreated wastes have been discharged to the river, and many permitted releases had no effluent limitations.

Recommendations: PRC recommends an investigation to characterize the constituents of storm water discharges, and identify the extent of migration of hazardous constituents into the storm sewer system. PRC recommends that, if necessary, actions should be taken to mitigate the sources of releases, such as diversions or treatment prior to discharge.

SWMU 30 **Landfill**

Conclusions: Since the mid-1960s, this unit has been used to dispose of precipitator dust, slag fines, demolition debris, blast furnace dry dust, and wastewater treatment sludge. Prior to being regulated as a landfill, coal tar decanter sludge (K087) and other facility wastes were disposed of at this unit. MWs have been installed in the area of this unit. Ammonia has been detected in groundwater from Groundwater in the Area of MW 5 (AOC 1), and benzene has been detected in the groundwater from Groundwater in the Area of MW 53 (AOC 2). The potential for release to environmental media is summarized below.

Groundwater: A release to groundwater has occurred.

Surface water: The potential for release is moderate because the culverted Burke Brook running beneath the landfill is hydraulically connected to groundwater. Burke Brook discharges to the Cuyahoga River.

Air: The potential for release is low because wastes currently disposed of at this unit are covered.

On-site soils: The potential for release is high because prior to the 1960s, coal tar decanter sludge (K087) and other unidentified facility wastes were disposed of in this area. Contaminated soils (K141) have been excavated from the Landfill.

Recommendations: PRC recommends an investigation to determine the extent of contamination.

SWMU 31 **Demolition Debris Staging Area**

Conclusions: Since 1988, this area has been used to accumulate demolition debris. No releases from this unit have been documented. The potential for release to all environmental media is low because the unit manages demolition debris that does not contain asbestos or PCBs.

Recommendations: PRC recommends no further action for this SWMU at this time.

SWMU 32 **Tar Sludge Staging Area**

Conclusions: This temporary unit stored dumpsters of coal tar decanter sludge (K087) in 1992. No releases from this unit have been documented. The potential for release to all environmental media is low because the unit is no longer active.

Recommendations: PRC recommends no further action for this SWMU at this time.

SWMU 33 **Desulfurization Tank**

Conclusions: Between 1979 and 1991, this unit accumulated nonhazardous desulfurization liquor. No releases from this unit have been documented. The potential for release to environmental media is summarized below.

Groundwater and on-site soils: The past potential for release was moderate because this unit was maintained underground and was never leak tested.

Surface water and air: The potential for release is low because this unit is no longer active.

Recommendations: PRC recommends subsurface soil sampling around the unit to determine if a release to subsurface soils has occurred.

SWMU 34 **Coal Tar Dumpsters**

Conclusions: Between 1979 and 1992, the dumpsters were used to accumulate coal tar decanter sludge (K087). No releases from this unit have been documented. The past potential for release to all environmental media was low because the dumpsters were maintained on concrete.

Recommendations: PRC recommends no further action for this SWMU at this time.

SWMU 35 **Sludge Mill**

Conclusions: Between 1979 and 1992, this former unit managed coal tar decanter sludge (K087). No releases from this unit have been documented. The past potential for release to all environmental media was low because the unit was maintained on concrete.

Recommendations: PRC recommends no further action for this SWMU at this time.

SWMU 36 **Coke Oven Gas Drip Legs**

Conclusions: Between about 1915 and the mid-1970s, this unit discharged coke oven gas condensate directly onto the ground along the 8,250 feet of the coke oven gas line. The constituents of this condensate were ammonia, cyanide (P030), and

phenol (P048). The past and current potential for release to environmental media is summarized below.

Groundwater: The past potential for release was moderate because the condensate was discharged directly onto the ground and, over the years, could have percolated to shallow aquifers potentially existing along the 8,250-foot long gas line. Currently, the release potential is moderate because contaminated soils could contribute to a potential groundwater contamination.

Surface water: The past potential for release was moderate because the gas line at one point is within 20 yards of the Cuyahoga River, and no runoff barriers are present. Currently, the release potential is high because if surface soils are contaminated, runoff with every rainfall could create a potential release.

Air: The past potential for release was moderate because the drip legs blew off condensate and may have caused misting, releasing semivolatile organic compounds contained in the condensate. The current potential for release is low because the unit is not active.

On-site soils: There has been an actual release because the unit discharged directly onto the ground.

Recommendations: PRC recommends soil sampling along the length of the coke oven gas line to determine if a release of hazardous constituents has occurred and if so, to what extent.

SWMU 37 **Coke Oven Gas Drip Boxes**

Conclusions: Between the mid-1970s and 1977, this unit collected coke oven gas line condensate and oil. The boxes had no release controls and most likely released condensate onto the ground. The constituents of this condensate were

ammonia, cyanide (P030), and phenol (P048). The potential for release to environmental media is summarized below.

Groundwater: The potential for release is moderate because the condensate was discharged directly onto the ground and, over the years, could have percolated to shallow aquifers.

Surface water: The potential for release is high because one box is within 20 yards of the Cuyahoga River, and no runoff barriers are present. If surface soils are contaminated, runoff with every rainfall could create a potential release.

Air: The past potential for release was low because the boxes had no lids and could have released semivolatile organic compounds contained in the condensate. The current potential for release is low because the unit is not active.

On-site soils: The potential for release is high if the unit discharged directly onto the ground.

Recommendations: PRC recommends soil sampling around the remaining boxes to determine if a release of hazardous constituents has occurred and if so, to what extent.

SWMU 38 **Coke Oven Gas Drip Tanks**

Conclusions: Between the late 1980s and 1991, these tanks accumulated coke oven gas condensate along the coke oven gas line. No releases from this unit have been documented. The past potential for release to all environmental media was low because this unit was constructed to contain spills.

Recommendations: PRC recommends no further action for this SWMU at this time.

SWMU 39 **Former PCB Storage Area**

Conclusions: Between 1979 and 1981, this unit managed drummed PCBs. No releases from this unit have been documented. The past potential for release to all environmental media was low because this unit was maintained indoors and was constructed to contain spills.

Recommendations: PRC recommends no further action for this SWMU at this time.

AOC 1 **Groundwater in the Area of MW 5**

Conclusions: This AOC has revealed a release of ammonia to groundwater from an unknown high-ammonia source. The potential for release to environmental media is summarized below.

Groundwater: A release has been identified.

Surface water: The potential for release is moderate because groundwater in the vicinity of area C of the Landfill (SWMU 30) is hydraulically connected to the culverted Burke Brook, which runs beneath area C.

Air and on-site soils: The potential for release is low because the source of contamination is most likely within the landfill.

Recommendations: PRC recommends installing additional groundwater MWs to identify the source of groundwater contamination. PRC also recommends that the facility continue with OEPA approved monitoring activities at the AOC.

AOC 2 **Groundwater in the Area of MW 53**

Conclusions: This AOC has revealed a release of benzene and chloride to groundwater from an unknown source. The potential for release to environmental media is summarized below.

Groundwater: A release has been identified.

Surface water, air, and on-site soils: The potential for release is low because the source of contamination is most likely within the landfill.

Recommendations: PRC recommends installing additional groundwater MWs to identify the source of groundwater contamination. PRC also recommends that the facility continue with OEPA approved monitoring activities at the AOC.

AOC 3 **Groundwater and Soil in the Area of MW 1**

Conclusions: This AOC has revealed a release of PCE and TCE to the groundwater and soils from the former Degreaser Sludge Container (SWMU 4). The potential for release to environmental media is summarized below.

Groundwater: A release has been identified.

Surface water and air: The potential for release is low because the contamination is confined primarily to groundwater and subsurface soils.

On-site soils: A release has been identified.

Recommendations: PRC recommends that the facility continue with OEPA approved closure and corrective action plans.

TABLE 3

SWMU AND AOC SUMMARY

	SWMU	Dates of Operation	Evidence of Release	Recommended Further Action
1.	98-Inch Line SPL Tanks	Early 1960s to 1984	Leaking pipes within secondary containment area	None
2.	60-Inch Line Tanks	Early 1970s to present	Cracks in secondary containment and leaking pipes within secondary containment area	Repair berm, repair piping, and complete closure activities
3.	84-Inch Line SPL Tanks	Early 1960s to present	Leaking pipes	Repair berm
4.	Degreaser Sludge Container	Early 1970s to 1988	Subsurface soil and groundwater contamination	Complete closure activities and remedial activities prescribed by OEPA
5.	Degreaser Drum Storage Area	1988 to present	None	Construct secondary containment
6.	Paint Shop Drum Storage Area	1990 to present	Spilled paint on ground observed during VSI	Improve waste handling techniques, and construct secondary containment
7.	Precipitators	1965 to 1982	None	None
8.	No. 1 Powerhouse Precipitator	Late 1970s to late 1980s	None	None
9.	Baghouses	1977 to present	None	None
10.	Silos	Late 1970s to present	None	None
11.	BOF Silos	Late 1970s to present	None	None

TABLE 3 (Continued)

SWMU AND AOC SUMMARY

SWMU	Dates of Operation	Evidence of Release	Recommended Further Action
12. Blast Furnace Dry Dust Collectors	About 1920 to present	None	Construct barriers to prevent airborne releases
13. Rolling Mill Scale Pit	Late 1960s to present	None	None
14. Strip Mill WWTP	1969 to present	None	None
15. Oil and Water Separator	1969 to present	None	None
16. Strip Mill Used Oil Tanks	1969 to present	None	None
17. Strip Mill Sludge Accumulation Area	1969 to present	None	None
18. Strip Mill Lagoon	1965 to present	None	None
19. LMF WWTP	1990 to present	None	None
20. LMF Sludge Dumpsters	1990 to present	None	None
21. Steel Plant WWTP	Mid-1970s to present	None	None
22. Steel Plant Sludge Accumulation Area	Mid-1970s to present	None	None
23. Suppressed Combustion WWTP	1977 to present	None	None

TABLE 3 (Continued)

SWMU AND AOC SUMMARY

SWMU	Dates of Operation	Evidence of Release	Recommended Further Action
24. Blast Furnace WWTP	Mid-1960s to present	None	None
25. Blast Furnace Sludge Accumulation Area	Mid-1960s to present	None	Construct a barrier between storm water sewer and the unit
26. Former Blast Furnace WWTP	1970s to 1990	None	None
27. Former Blast Furnace Sludge Accumulation Area	1970s to 1990	None	None
28. Coke Plant WWTP	1977 to 1991	None	None
29. Storm Sewer System and Outfalls	Late 1800s to present	Effluent limitation violations and unregulated releases	Characterize discharges and extent of contamination; mitigate releases
30. Landfill	Mid-1960s to present	Preregulated coal tar decanter sludge soil contamination, groundwater contamination, and tar-contaminated soil	Conduct investigation to determine extent of contamination
31. Demolition Debris Staging Area	1988 to present	None	None
32. Tar Sludge Staging Area	September 1992 to December 1992	None	None

TABLE 3 (Continued)

SWMU AND AOC SUMMARY

SWMU	Dates of Operation	Evidence of Release	Recommended Further Action
33. Desulfurization Tank	1979 to January 1991	None	Subsurface soil sampling to determine if a release has occurred
34. Coal Tar Dumpsters	1979 to 1992	None	None
35. Sludge Mill	1979 to 1992	None	None
36. Coke Oven Gas Drip Legs	About 1915 to mid-1980s	Release of hazardous constituents directly onto ground	Soil sampling to determine extent and type of releases
37. Coke Oven Gas Drip Boxes	Mid-1970s to 1976	Release of hazardous constituents directly onto ground	Soil sampling to determine extent and type of releases
38. Coke Oven Gas Drip Tanks	Late 1980s to 1991	None	None
39. Former PCB Storage Area	1979 to 1981	None	None

AOC	Dates of Operation	Evidence of Release	Recommended Further Action
1. Groundwater in the Area of MW 5	1990 to present	Groundwater contamination	Install additional wells to identify contamination source and continue with OEPA approved monitoring
2. Groundwater in the Area of MW 53	1990 to present	Groundwater contamination	Install additional wells to identify contamination source, continue with OEPA approved monitoring

TABLE 3 (Continued)

SWMU AND AOC SUMMARY

AOC	Dates of Operation	Evidence of Release	Recommended Further Action
3. Groundwater and Soil in the Area of MW 1	1990 to present	Groundwater and soil contamination	Continue with OEPA approved closure and corrective action plans

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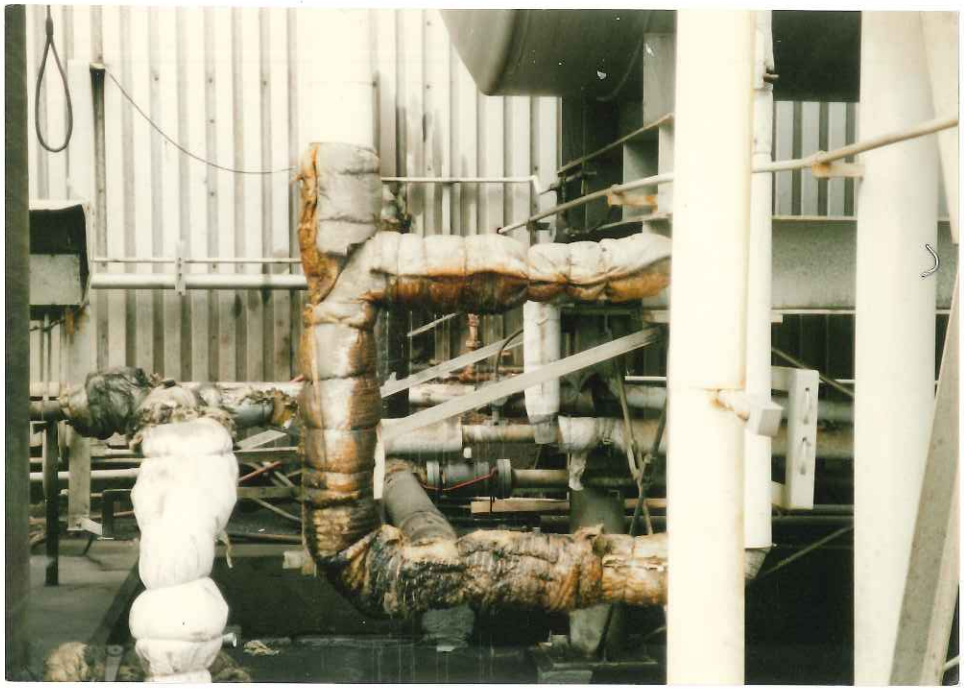
Photograph No. 1 Location: SWMU 1
Orientation: West Date: 12/14/93
Description: Approximate location of former 98-Inch Line Spent Pickle Liquor (SPL) Tanks

Photograph No. 2 Location: SWMU 2
Orientation: West Date: 12/14/93
Description: 60-Inch Line Tanks; the 15,000-gallon fiberglass tank for waste chromic acid storage is on the left, and the 8,000-gallon steel tank for SPL storage is on the right



Photograph No. 3 Location: SWMU 2
Orientation: West Date: 12/14/93
Description: Close-up of leaking pipe system of 60-Inch Line Tanks; leaking material is within the secondary containment area

Photograph No. 4 Location: SWMU 3
Orientation: West Date: 12/14/93
Description: 84-Inch Line SPL Tanks on the lower tier; unit's unloading dock is in front of the unit

Photograph No. 5 Location: SWMU 4, AOC 3
Orientation: West Date: 12/14/93
Description: Former location of the Degreaser Sludge Container (SWMU 4); the Groundwater and Soil in the Area of MW 1 (AOC 3) is in the center of the photograph

Photograph No. 6 Location: SWMU 5
Orientation: West Date: 12/14/93
Description: Degreaser Drum Storage Area; note the condition of the concrete; parking lot asphalt is in the foreground of the photograph

Photograph No. 7 Location: SWMU 6
Orientation: North Date: 12/14/93
Description: Paint Shop Drum Storage Area; note the paint stains on the wall and the drain on the ground left of the drums; the ground is slag material

Photograph No. 8
Location: SWMUs 8 and 10
Orientation: East
Date: 12/14/93
Description: The No. 1 Powerhouse Precipitator (SWMU 8) behind one of the Silos (SWMU 10)

Photograph No. 9
Orientation: South
Location: SWMUs 7 and 9
Date: 12/14/93
Description: A Baghouse (SWMU 9) on the side of the building in the center of the photograph; this unit was previously a Precipitator (SWMU 7)

Photograph No. 10
Location: SWMU 11
Orientation: South
Date: 12/14/93
Description: A typical BOF Silo

Photograph No. 11
Location: SWMU 12
Orientation: Southeast
Date: 12/14/93
Description: A Blast Furnace Dry Dust Collector beneath the hopper; this unit is no longer active

Photograph No. 12
Location: SWMU 12
Orientation: North
Date: 12/14/93
Description: C2 Blast Furnace Dry Dust Collector beneath the hopper in the background

Photograph No. 13 Location: Near the C4 Blast Furnace
Orientation: North Date: 12/14/93
Description: Black, shiny dust that turned into mud in wet areas; runoff from this area flows into a storm water drain (SWMU 29), which is not in this photograph

Photograph No. 14 Location: SWMUs 14 and 15
Orientation: North Date: 12/14/93
Description: Oil and Water Separator (SWMU 15) of the Strip Mill Wastewater Treatment Plant (WWTP) (SWMU 14)

Photograph No. 15 Location: SWMUs 14 and 16
Orientation: South Date: 12/14/93
Description: Strip Mill Used Oil Tanks (SWMU 16) of the Strip Mill WWTP (SWMU 14)

Photograph No. 16 Location: SWMUs 14 and 17
Orientation: South Date: 12/14/93
Description: This is the Strip Mill Sludge Accumulation Area (SWMU 17) of the Strip Mill WWTP (SWMU 14); blast furnace dry dust is the black pile in the right foreground

Photograph No. 17 Location: SWMUs 19 and 20
Orientation: West Date: 12/14/93
Description: Ladle Metallurgical Facility (LMF) Sludge Dumpsters (SWMU 20) of the LMF WWTP (SWMU 19); dumpsters are normally stored covered, but the one in the foreground was opened for inspection

Photograph No. 18 Location: SWMUs 24 and 25
Orientation: North Date: 12/14/93
Description: Blast Furnace Sludge Accumulation Area (SWMU 25) of the Blast Furnace WWTP (SWMU 24)

Photograph No. 19 Location: SWMUs 26 and 27
Orientation: North Date: 12/14/93
Description: Former Blast Furnace Sludge Accumulation Area (SWMU 27) of the Former Blast Furnace WWTP (SWMU 26); this unit is no longer active

Photograph No. 20 Location: SWMU 29 and Burke Brook
Orientation: Southeast Date: 12/14/93
Description: Two culverts on the left is where Burke Brook flows into the Cuyahoga River; the round Outfall (SWMU 29) on the left is outfall 005

Photograph No. 21 Location: SWMU 30
Orientation: West Date: 12/14/93
Description: Mounds in the background are in area B of the Landfill; the foreground is covered with slag material and is characteristic of the ground across most of the Landfill

Photograph No. 22 Location: SWMU 30
Orientation: Northeast Date: 12/14/93
Description: Southwest side of area B of the Landfill; wall is constructed of slag material incased in plastic mesh

Photograph No. 23 Location: SWMU 30
Orientation: North Date: 12/14/93
Description: Black mound on the right is in area C of the Landfill; to the left is Runoff Pond No. 4; the pile on the left in the background is slag material waiting to be processed by Stein, Inc. (Stein)

Photograph No. 24 Location: SWMU 31
Orientation: West Date: 12/14/92
Description: Three piles comprising the Demolition Debris Staging Area

Photograph No. 25 Location: SWMU 32
Orientation: East Date: 12/14/93
Description: Tar Sludge Staging Area in front of the orange cones

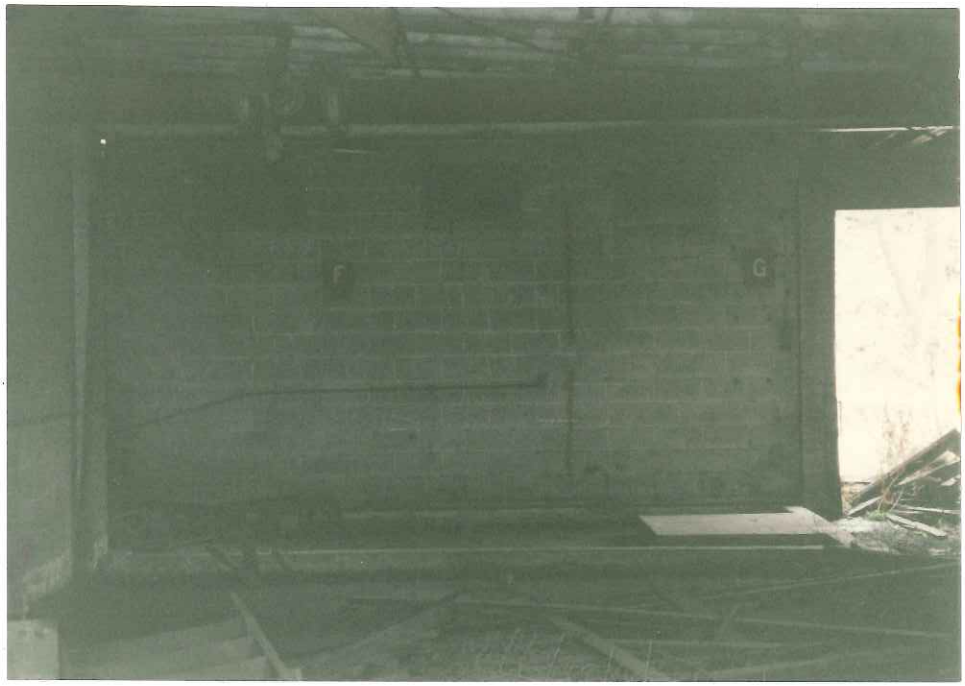
Photograph No. 26 Location: SWMU 33
Orientation: South Date: 12/14/93
Description: Beneath the curb area is the Desulfurization Tank; in the background is the No. 1 coke plant undergoing demolition

Photograph No. 27 Location: SWMU 34
Orientation: East Date: 12/14/93
Description: A No. 1 coke plant coal tar decanterer (sloped object on the right); a Coal Tar Dumpster (SWMU 34) would have been positioned beneath the chute located in the center

Photograph No. 28 Location: SWMU 35
Orientation: North Date: 12/14/93
Description: Sludge Mill was located to the left of the large building on the right; unloading ramp is visible in the lower right; the No. 2 coke plant batteries are located in the background

Photograph No. 29
Location: SWMUs 36 and 37
Orientation: South
Date: 12/14/93
Description: One of the Coke Oven Gas Drip Boxes (SWMU 37) on the ground; the piping leading into the unit is a Coke Oven Gas Drip Leg (SWMU 36); the coke oven gas line is the large, orange pipe at the top left side

Photograph No. 30
Location: SWMU 38
Orientation: East
Date: 12/14/93
Description: One of the Coke Oven Gas Drip Tanks near the cold rolling mill



Photograph No. 31 Location: SWMU 39
Orientation: East Date: 12/14/93
Description: Along the back wall behind the curb is the Former Polychlorinated Biphenyl (PCB) Storage Area

Photograph No. 32 Location: AOC 1 and SWMU 30
Orientation: South Date: 12/14/93
Description: Groundwater in the Area of MW 5; in the background is area C of the Landfill (SWMU 30)

Photograph No. 33 Location: AOC 2, SWMU 30
Orientation: Southwest Date: 12/14/93
Description: Groundwater in the Area of MW 53 (AOC 2) in the foreground; area B of the Landfill (SWMU 30) is the hill in the background

APPENDIX B

VISUAL SITE INSPECTION FIELD NOTES

(39 Sheets)

MONDAY DEC 13, 1993 (1)

LTV Steel Company

Weather: Clear, cold ~25°F
Windy.

Arrive at site at 8:00 check in at guard gate. Park & meet Richard Nemeth.

Meeting begins at 0825

12/13/93

(2)

Persons Present during inspection

NAME	Co.
Jeff Swano	PRC
John Maher	PRC
Keith Nagel	LTV
Richard Nemeth	LTV
Stan Richter	LTV
Larry Szuhay	LTV

LTV Steel Company, Inc.
Cleveland Works, East
Formerly Republic Steel, in
1984 changed the name
LTV ~~Steel~~ Corp + Republic Steel
Corp merged to form LTV Steel
Co., Inc. The Steel end of
LTV was called Jones +
Laughlin (was west). Republic
was east side.

12/13/93

(3)

3100 East 45th St.
Cleveland, OH 44127

~826 acres.

1 ton of steel generates
600 lbs of slag. All the
slag is recycled on-site
or sold. Moribito sells
(is one of the marketers) it.

Facility is entirely fenced. There
is a security dept. TV monitors,
24-hour guards. Signs around
the property.

12/13/93

LTV is a publically-held corporation.

5300 Both ~~east~~ & west employ ~~4,000~~ people. 3 shifts 365 days/year, for some processes. otherwise, 3 shifts everywhere. About 3,000 people are on the east side.

Operations began before 1900. West side blast furnaces were called the River Furnace Co. East-side operations began as Corrigan & McKinney. Rolling Mills were at the strip mill area called Cleveland

~~12/13/93~~ 12/13/93

Rolling Mill. In the mid 30s all ~~of~~ ~~12/13/93~~ companies were merged by Republic Iron & Steel. The 98" Rolling mill was constructed. #1 Coke plant built ~1915. #2 open hearth built in the mid 1950s. #2 BOF built in the 1960s. Continuous Caster operation in 1983. There was a Bar Mill Complex, closed in 1981. Originally the plant was for bar making (hot-forming bars as lengths or coils). This was feedstock for fasteners. In 1981 most operations closed down

~~12/13/93~~ 12/13/93

because of a shift in the industry to mini-mills. Most operations of the Company were consolidated. Sold the bar business in early 80s. Cleveland has been flat-roll since 1981. #2 BOF torn down in the late 1960s. No more open hearth furnaces, ended in early 70s. The BOFs on the west side of the river are not operating + are scheduled for demolition.

The BOF furnaces #5 & #6 were put into operations during 1952

12/13/93

WWII. Operated by Republic. #2 Coke plant constructed in the mid 40s also. Operated until 12/15/92. #1 Coke plant closed in 1991 (built ~1915)

Coke mfg ⇒ Coal is heated up in the absence of air to make fuel for BOFs. Volatiles are heated off leaving behind 98% carbon. The gasses are processed. Coke oven gas is methane and carbon Monoxide. "Batteries" are a series of ovens. Quench the coke and it

12/13/93

goes to the BOF provides heat + carbon monoxide for the process.

BOF take taconite + coke as the charge (w/ limestone). 3300°F reduces the ore.

off
Gasses (mainly carbon monoxide) are cleaned, separated, + becomes a fuel. Fuel goes to recooperators for blast (preheats the blast). Excess fuel is burned in boilers to produce steam for turbo-blowers (compressors).

12/13/93

This creates the pressure for the blast.

No 1 Coke had ~7 batteries. Now gets Coke from other LTV locations + purchase from other manufacturers.

98" mills were for cold reducing.

Iron goes to BOF to make it steel. Blow Oxygen into the molten. To oxidize it. This is steel in molten form. It is further purified. Degasses. Very low carbon steel. Cast into slabs at the continuous

12/13/93

(10)

Slab caster. Further reduced by cold or hot rolling. Now have a 9" slabber. Slabs go to the hot mill to reduce the thickness & coil it. Can also cold roll it to smaller gauges. Hot bands go to finishing department. Steel is pickle cleaned prior to cold reduction. Annealing process heats the steel, allowed to cool & then it is formable. Heating is done in an inert aspnosphere (nitrogen & another gas). Batch anneal takes coils stacked in a furnace. Annealed.

S 12/13/93

(11)

Built an annealing operation in 1991. Continuous. Next goes into a temper mill to harden it a bit to prevent scratches. Coil is coated with an oil and rolled. Some is warehoused on site. Customers are automotive, appliance.

Coating processes => 2 coating lines 60" electroplate line and (LS-E a separate company Sumitomo Metals, Inc joint venture for coating)..

S 12/13/93

~~late 60s~~ started the new 1971 hot & new 1978 cold mills in the strip mill area.

S 12/13/93

(12)

Yucca flats ⇒ former slag processing areas, landfills, storage piles, fill material, + mill wastes.

To build the 84" Strip mill the foundation was dug out + taken to Washington park.

No guess to begin date ~1930s.
Had cindering plant operations. Agglomerates iron making wastes. In the late 1960s the landfill began. Closed down in the early 1970s. Killed by the Clean Air Act.

RCRA status is LQG. Still closing SPL tanks +

12/13/93

(13)

degreaser tank to become a generator only. Still a TSD facility, per State of Ohio because closure not completed.

On the north side of facility is Zaclon, formerly owned by Du Pont, a chemical plant East is freeway + residences + Morabito Trucking, Inc. SE is Rilley Tar (Koppers Industrial Corp. processes coke tar). South McGean-Rohco (chemical?), Burke Ave dump; warehousing retail, fabricators; Alcoa foundry, another chemical company. West side is

$ 12/13/93 ~~taken~~

12/13/93

Cuyahoga River, Cleveland West Works, a rendering facility, Master Metals a lead smelter.
On the East is also a large gasoline terminal (storage tanks built).

Lease some property Stein, Inc. processing slag; Standard-Lafarge Company, process iron-making slag.

In 1976 installed supressed combustion system on #2 BOF. Primary air collection control includes those

12/13/93

systems that capture emissions at the furnace. Secondary systems are those that capture emissions that go on outside of the furnace such as tapping & charging.

~~Vapor degreaser unit~~ → 12/13/93

1130 Break for lunch.

1225 Return from lunch & phone calls. We will talk about waste streams, starting with the process, the waste generated, & the SWMUs associated with the waste.

12/13/93

(16)

#(Coke process
K087. Tar decanter sludge.
Prior to ~1980 before the
Sludge mill was built (in 1979)
coal tar mixed w/ coal
& put back into coke
battery.
Now placed into 440-gallon
rolling container boxes. Placed
hopper ← under the decanter. Goes
to a tank at the sludge
mill. Screw conveyor to
the belt that carries
coal and back into the
Coke ovens. In the mid
1980s, EPA exempted any
K087 waste that is
(40 CFR 261.4(a) 10)

12/13/93

(17)

12/13/93
~~not~~ recycled. Not a sol.d
waste. In 1990 includes
Coke plant TC wastes, and
K141 & K145 (1993)
When Coke #1 shut down, tar
went to #2 Coke. When
Coke #2 closed down, tar sludge
was mixed with coal and
sent to their Warren, Ohio
facility. (LTV Steel Co., Inc,
Warren Coke Plant)
#2 Desulpherization Plant was
built in the late 1970s. to
desulpherize Coke oven gas
so gas could be burned.
To clean the gas, a methyl,
ethylamine is added. A

12/13/93

(18)

sludge is created during air cleaning. The sludge collects at the bottom of the tank. Periodically cleaned by Clean Harbors of Cleveland. Pump out ~~of~~ 12/13/93 by vac truck. Not hazardous. Prior to 1970s, the sulphur was in the gas & burned with the gas. ChemClear picked up wastes before they were bought out by Clean Harbors.

600 gal.

#3 Process residuals remained at time of coke plant closures. Tar product tanks produce

12/13/93

(19)

tar heels, solidified tar. Several tar tanks. At closure, #1 Coke tar was mixed with coal & put into #2 Coke plant. When #2 Coke shut down, it went to Warren, Ohio.. If this material was not recycled it would be K141. Shut down Coke plants, tar heels were shipped via truck & Train to Warren. Tar heels were never removed from tanks because they never entirely fill up with tar heel -- it reaches an equilibrium & is not disposed or recycled.

12/13/93

#4 wastewaters from Coke Plants. During destructive distillation of coal, off gasses have water condensed down. The water needs to be treated. WWTP at Coke Plant #1 took also Coke #2 wastewater. Water contains, ammonia, phenol & Cyanide. Built in 1977. Prior to 1977 it was used to quench Coke as make up water during quench.

12/13/93

#5 Coke gas drippings ⇒ all part of the Coke plants. Gas line occurs over the facility. Drip legs are on this system of ducts. Prior to late 1980s, drip legs were bled onto the ground. In the late 1980s, 25 tanks were installed along the Coke oven gas line (COGL). Sizes varied between 5000-& 200-gallons, steel tanks. Containment around the tanks was concrete, covered 110% the volume of the tanks

12/13/93

(22)

#6. Blast Furnaces (B/F) gas cleaning generates a B/F DRY DUST. Dropped on the ground by the point of generation, called the Dry Dust Catcher (Bevel wash). LTV dumptruck is loaded w/ a front-end loader and taken to the Area C Landfill on-site. Prior to closing Sinter (1975) plant, it also went to Sinter plant.

12/13/93

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#7 WWTP Sludge at the B/F. Gas out of duster has to be cleaned with a water spray in the Gas Washer. Now gas can be burned. Water has fine particles that need to be removed. Sludge is non-hazardous Sludge tested by LTV regularly, 1 time per year by outside firm. A vacuum filter dries the sludge dropped onto a concrete sludge accumulation area. Front-end loader → dumptruck → Area C Landfill.

12/13/93

(24)

#8 #2 BOF (AKA Suppressed Combustion BOF). Has 2 waste streams. At the steel plant, all air is captured and goes to a baghouse. Converted from a precipitator to a baghouse in 1982. In 1977 ESP was used when secondary capture system was installed. ESP ~~used~~ $ 12/13/93 built in 1965 for the then BOF. 1977 Suppressed Combustion built and ESP used for secondary emission. The SCS adds oxygen to iron; off gas

SCS

$ 12/13/93

(25)

is cleaned with a water nozzle system within the venting. Gas is flared. Water has solids is treated in the SCS treatment plant. Solids go into clarifier, pumped out, dewatered by vacuum filter. Solids mixed with ~~Caster~~ $ 12/13/93 Steel plant $ 12/13/93 $ WWTP solids. ~~Dried~~ $ 12/13/93 Dried mechanically. Dropped into a concrete sludge storage → frontend loader → dump truck → Area C Landfill.

Baghouse dust goes to a

$ 12/13/93

(26)

Silo via screws. Dumptruck empties it ~2 times per week (sealed truck w/ a tarp) [illegible] 12/13/93
Myers Chemical Transport, Inc. transports to Envotech in Belleville, MI. Or Dart Trucking Company takes it to Delhi Products, Inc. in Youngstown, Ohio for briquette processing (becomes a spar which is a feedstock to BOF melting process).
Off-site disposal began in ??? will have to check
About mid 1980s they stopped

12/13/93

(27)

placing it in Area C landfill because of D008 content began increasing. Peoria, Delhi, 4-County, & Michigan Disposal were all used as off-site disposal.

#9 Steel Plant WWTP⇒ built in mid 1970s. Used to take bar mill & slabbing mill waters. Replaced by Continuous Caster System. Now gets Caster water & storm water runoff. Descaling & cooling generates most water. Treats 5-10,000 gpm.

12/13/93

(28)

descaling
← Iron oxide is cleaned off the steel + the steel is cooled so it can go to next process. ~~Scales~~ 12/13/93
Scales go to bottom of clarifiers. Pumped to vacuum filters mix with SCS sludge. Dewatered → sludge storage → f-e loader → truck → Area C Landfill.

#10 Rolling mill slabs from Continuous Caster. Hot strip mill stretches a slab to make a coil. Runs through rolls to spec.

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(29)

A series of sprays removes scales + cools the strip. A lot of water is used. Water goes to a scale pit. Pumped to 2 clarifiers 210' each (diameter). Sludge is pumped out, vacuum filtered, dropped on concrete sludge storage area → f-e loader → truck → Area C. Water goes to a large lagoon. Side arm cooling goes to a cooling tower, through deep bed filters (sand). Most water is recycled. Solids dredged from lagoon every ~10 years

12/13/93

and disposed of at Area C Landfill. Lagoon installed in 1965. Clarifiers built in 1975. Prior to 1965 went into the river.

Some hot bands are sold or it has to be annealed & Cold-rolled. Cold rolling runs the strip over cold rolls to reduce its thickness. Oil is applied to lubricate. Soluble oil. Oil needs to be cleaned off prior to selling. Oily waste water goes to a separate WWTP. Equipped with 2

12/13/93

API oil/water separator. Soluble oil is treated with ferric chloride w/ a flox, raise pH. Dissolved in

12/13/93

gas floatation system. Air is injected to release particles. They are skimmed off the top. Dewatered and treated per usual, goes to Area C. Installed in 1969. Oil is collected in a Tank, Aboveground.

Always been used.

Research Oil Co. of Cleveland reprocesses the oil and sells the oil back to LTV to burn in blast furnace.

12/13/93

(32)

#11 Pickle the strip to descale. Spent Pickle liquor → generated currently in 2 areas. After pickling, it is sprayed with water (cleaned) The acid rinse water goes to the Strip Mill WWTP.

→ 84" & 60" lines.

Strip goes to zinc electroplating for plating.

12/13/93

(33)

#12 Electroplating 60" + L-SE & generates SPL

After pickled & cleaned, wastewaters containing zinc are generated. Goes to WWTP. Settles out iron & zinc hydroxide in 2 90' clarifiers (APA metals removal system). Water is discharged. Solids are pumped to be mixed with hot strip mill sludge, and oily waste solids, ~~iron~~ & ~60,000 tons per year are generated. None is F-listed waste because it is zinc only.

12/13/93

(34)

K-wastes go off site, and they test annually. Environmental Control Labs, of Strongsville, Ohio and other labs.

Zinc coated strip goes to automotive industry.

#13 SPL from 98" + 84" hauled off site for over 30 years. Prior to that probably went into the river. Never disposed of on-site. Last 4 years Cleveland Eagle brook of Ohio, Inc. pumps 84" tanks into trucks. They sell it to

$ 12/13/93

(35)

POTWs as treatment chemical. Canada + U.S. Gone to a CWM Vickery, Ohio Deep wells. (prior to 1984) + several other TSD facilities. Tadbit, Inc. Transported + sold to POTWs.

60" SPL contains zinc. Whoever owned Vickery Deep Wells it was disposed of. Eagle brook sometimes transported to VDW. Mid 80s to 1990s VDW was closed so waste went to several facilities. (See Annual Haz Waste reports). From early 1980s to 1988 some went

$ 12/13/93

(36)

to S 12/13/93 Warren facility for regeneration & Sold back to LTV. Stopped this because of quality problems.

#14 Degreasser. installed in early 1970s. Still waste regenerated Sludge Emptied into a bucket & transferred into a 55 gallon drums. Drums are stored outside the DSA. Prior to using drums; The dumpster (RCRA unit) was used. Goes to Chemtron. The PCE gets dirty & it

S 12/13/93

(37)

is pumped out by various Transporters using vacuum trucks. Possible that in the earlier years the dumpster was moved indoors & PCE placed into it. Currently Chemtron Corp of Cleveland (Avon) Ohio. Recovers the solvent. Some is to kilns. Used Since Early 1980s. NFI. Trays in the As needed ~4 times per yr. degreaser need to be cleaned. Trays are taken out. Shovelled into 55 gallon drums. Goes to Chemtron. Sludge was burned in the Sludge mill. Dates will be given to me later.

S 12/13/93

(38)

#15 Area B & Area C = Zucca Flats Landfills. Area A Never used. Area North LF is proposed (applied for PTI)

Area B got Precip dust, rubble, other wastes. Stopped receiving wastes in 1988. Began receiving wastes in 1965 b/c ESPs began being used. Capped + has Stormwater runoff collection. 1' Sand layer cap. 40 mil LDPE cap + a geonet fabric + 3' Soil. ~15 acres.

12/13/93

(39)

No liners beneath it. Mostly glacial till.

Area C caisson... 2.4 mil cu yds filled of 2.7 cu planned Opened mid 1960s. Overlies Burk Brook. Ponds #4 + 5 are installed for Stormwater. ~22 acres OAC operated. Permit from State 4/16/92 for the expansion - Licensed by State + County. Dust + Sludge is primary waste. Standard Laforge processes B/F slag. Crush, separate, sell anything with value.

12/13/93

(40)

Tar encountered is believed to be tar from Coke operations. No idea how much. And it is placed in sporadic areas. No information on the extent of the tar disposition. Historically, most facility wastes did not go off site. So if this tar was outside, it went to their landfill.

80% is ore steel, 20% is scrap.

$ 12/13/93

(41)

#16 LMF WWTP ⇒ LMF = ~~finite~~ a pretreatment to steel plant WWTP 12/13

Ladle Metalurgical Facility. Vacuum degasser can get zinc. Spray gas w/ water; Gas is flared. Water to WWTP to remove zinc. 5,000 gpm circulation. pH is elevated to precipitate. Goes to 2 45' clarifiers. Water is filtered in sand filter + to Steel plant WWTP. Clarifiers are filter pressed. Solids are tested + determined to be D006 + D008 → (comes in from scrap materials) Goes into plastic lined a dumpster box, 10 cu yards

4,000 to cooling towers
1,000 to WWTP

$ 12/13/93

steel, bakes. Built LMF in 1990. Prior to 1990 no waste generated because there was no facility to augment. In 1990, then, they began removing more impurities, making a better product.

#17 PCBs generated occassionally. In 1979 → 1981, reducing the PCB levels in their hydraulic systems program. During this time generated large volume of PCBs stored in drums, drums stored. 30'x 15' concrete floor, 1' berm, fenced

12/13/93

locked, indoors, locked building. Disposed of by CWM when they operated the ocean burns. Also went to Emile Alabama.

Currently, contractors Dynex, GE, ENSR, will do it. Removes wastes. Wastes are drummed + temporarily stored near the point of generation + disposed off-site by contractor

12/13/93

(44)

#8 Since 1988 been operating a demolition debris area. Silver Arrow + other transporters load dump trucks + take to Kurtz Brothers Landfill in Cleveland, Oh.

USTs ⇒ for gasoline + diesel fuels. All yanked but one one was filled in place. 3 were ~~left~~ ℄ 12/13/93 installed in 1988. All pulled prior to 12/88.

℄ 12/13/93

(45)

Facility has had fuel oil spills into the river. Fined by USCG.

City water from Lake Erie. No wells on site. B/F uses river water for make-up. River water used for non-contact cooling water.

Stormwater + floor drains ℄ 12/13/93 ~~Either~~ go to WWTP + NPDES discharge. ~~Some~~ Stormwater go to city sewers + they go to POTW.

Floor drains in Cast House go to the river. 0:1 (50 gals) Spill on 12/6/93 went there. 8:30 pm.

℄ 12/13/93

(46)

No wells

Now I ask questions I've numbered on separate paper.

24. Kish is a graphite-like material seen around iron ore pours. Flakey residue that blows around.

25. WCB

26. WCB

27. NA

28. WCB

29. 1040 Pine Ave.
Warren, OH
Contact Tom Shepker
(216) 841-8200

30 WCB

12/13/93

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31. Used lime, soil. Placed into either 55-gallon drums, lugger boxes. K062 labelled. Await approval for disposal ~~Eagle Creek or other~~ 12/13/93
Various transporters will take it to Adams Center CWM Landfill or Envirosafe in Oregon, Ohio.

32 WCB

33. Various transporters. First batch placed in Coke #1 Tar tank. Mixed w/ process tar. The tank was emptied by various haulers to ESOI. 2nd round (6/93) were placed in roll-off & dump trucks.

12/13/93

boxes, tested by Environmental Control Labs as non-hazardous. Disposed of at ESOI. No waste code. No tar left in the excavation area. All is disposed of.

34. No. Gone thru public notice. No. public notice

35. WCB.

36. ~~If~~ 12/13/93 11/23/93 oil spill Source unknown. Cause WCB. Unknown. #6 fuel oil, which is used at a West Side B/F. NA.

12/13/93

37. Awaiting issuance. Drafted & ready to go. OEPA limbo. First NPDES issued in 1974.

Interview ENDS AT 1820

12/13/93

TUESDAY DECEMBER 14, 1993

Arrive at site at 0800
Overcast, ~39°F, fairly
Calm winds.

Persons Present:

NAME	Affiliation
Jeff Suarno	PRC
Nick Nigro	PRC
Rich Nemeth	LTV
Stan Richter	LTV
Kieth Nagel	LTV
John Romano	Cuyahoga County

We are planning our tour
route for today. Rich is

12/14/93

ordering a van for us to all
travel in.

* The facility rep. says he has
not seen any analytical
results & does not know of
any sampling around the
coke gas drip legs.

0900 Walkaround Tour begins.

Two flyash precipitators on
West side. The D-boiler
#1 powerhouse. Precipitator
was put on b/c it used to
burn coal. Stopped burning
coal in late 1980s. This
opened in late 70s.

12/14/93

(52) Bloom Corp Nick Nigro photographer

#	Time	Dir	Subject
1	0915	E	Flyash silo
2	0925	S	WWTP C2/C4
3	0930	N	Clarifier at " "
4	0940	N	Steam trap
5	0940	SE	Dry dust collector
6	0950	W	Coke gas drip tank
7	0950	N	C2 dust collector
8	1020	W	84" SPL tanks
10	1035	SE	Coke gas drip tank
11	1040	W	Dripping waste
N	E W	R	O L L
1	1045	W	60" SPL tanks
2	1100	W	Sludge accum area
3	1100	W	Used oil tank
4	1105	N	Oil water separator
5	1110	E	Clarifiers

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(53)

#	Time	Dir	Subject
6	1115	E	98" SPL tanks wave
7	1330	NE	Area B
8	1335	E	400 cu yd rolloff storage
9	1335	NW	Area B 2 mounds
10	↓	↓	" "
11	1335	N	Area C, Pond #4
12	1340	S	MW 53, Area B on left
↓	↓	↓	84" Slab mill on right
13	1345	W	Demolition debris staging area
~~14~~ ↓	↓	↓	84" is in bkgrnd.
14	1400	S	MW5 w/ Area C in bkgrnd.
15	1410	N	WWTP B/F Sludge Accum area.
16	1420	E	Tar decanter sludge tank.
17	1430	N	Sludge mill #037
18	1445	S	Brush Brook & outfall 005
19	1455	N	Blast Furnace

12/14/93

Now it burns natural gas. Sometimes ash was used to stabilize WWTP sludge at strip mill. Coal companies took it after dropping off coal. They landfilled it. Also had it landfilled at various sanitary landfills.

WWTP for B/F (C2/C4)(photo 2)
Built in 1970s. Closed ~1990.

C-4. Dry dust collector.

The #1 Power plant is operating.

12/14/93

Blast Furnace gas seal #14. The water seal blows condensate off the steam trap. It is causing a puddle to run onto the ground and is running oily/coal around (photo 4). Runs to a trench to outfall 14.

Dust collector. Collects in hopper. Dropped on the ground. F.E loader to truck. 20' diameter.

Furnace closed in 1979. Before the 70s built more like the 1920s. I.E. Built in the 20s.

12/14/93

(56)

See a coke gas drip. Tank has 2° containment. 4' diameter tank, 1000 gallons. 10" berm.

There is this coal/grit on the ground. Overhead structures drip.

C2 dust catcher looks like the other one

Coal piles, breeze piles, demolition debris piles, slag piles, you-name-it piles are present around this west side of River.

12/14/93

(57)

See 54" SPC tanks HCL tanks above waste tanks. Loading dock has a drain at north end, connected to a sump that will pump spills back into tanks. Tanks are emptied by gravity. Spills have occurred here in the past.

Secondary containment is 17' wide, 5' deep & ~ 30 yards long. Fiberglass tanks, replaced rubber lined steel tanks. Epoxy coated outside, brick inside lining, with

12/14/93

(58)

Rubber lining s/t acid brick or acid grout, interior & Concrete exterior. Exterior paint is peeling. Floor is acid brick. Exterior at northeast corner is corroding/crumbling.

Coke gas tank. The line here carries natural gas. (No coke ovens) The lines are bleeding onto the ground. This is steam they say.

60" SPL. 1 fiberglass tank and 1 steel, lined tank. SPL goes into steel tank.

S 12/14/93

(59)

1 Secondary Containment is coated w/ paint. Berm is 15" wide, 2 Feet high at the center & 1 foot high at the ends & about 30 yards long by 8 yds. The line is leaking -- right now they are pumping out the basement beneath the pickle lines. This is most likely a water/acid mix waste. There is evidence on top of steel tank of overflow. Drain at north end, outside of containment goes

12/14/93 S

(60)

to oily waste WWTP.
North end exterior is
corroded of the contain-
ment wall.

1055 Arrive at Strip mill WWTP
B/F dust is piled
around the sludge accum-
ulation area. It is
(Meet Tom Girdler, Gen'l
Supervisor of Strip Mill)
mixed with sludge prior to
land filling, helps dewater.
See Used oil Tanks,
~16,500 gallons steel
unlined tanks. Originally
installed in 1970. Berm is
6" x 1', 30' x 30' curb.

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A manhole in the center
is connected to the
oily waste system.
Cracks/gaps are at
expansion joints of
curb.

API oil water separators
2 100,000 gallon tanks.
Soluble oil & water comes
off at the roller end
called drum skimmers
& goes to oil tanks.
Oil comes from every oil finishing
basement of the #1 & #3,
& 84" lines. Water goes
to outfall 002.

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See 98" SPL former location.

See the annealing process; batch and continuous. No wastes generated. Scrap pieces return to process. The floors are pitted + oily; sumps + drains go into basement + flow to the Strip Mill WWTP.

See the hot rolling process. Slab is heated and goes through a series of rollers to flatten it. A lot of water is used in this process. The water falls to the basement + goes to Strip mill WWTP.

1245 Break for lunch.

1330 Arrive at Area B landfill in Yucca Flats. The wall is made of plastic mesh crates filled w/ slag.

See 400 cu yds of roll off boxes covered about 200' x 200' Ground is slag material. This Yucca Flats is also storing scrap materials that will be used later such as sand, metal,

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metal parts to equipment (which has graffiti all over them), gravel, etc.

Area where PCBs were stored, was an old brick mfg. plant. This building is collapsing. The area is curbed, ~15'x30', 9" high berm. Concrete.

B/F WWTP Sludge accum area. Black.

Tar decanter sludge Photo 16
On the right is the decanter That takes the bottom

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and it goes up to the chutes seen in the picture The Tar sludge goes into a chute into a container that would have been positioned below it. Like a small dumpster box on wheels A winch pulled full boxes out from under chute & a truck would pick it up. This area has a 2° containment, 1' high 30 yds long x 8' wide.

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Sludge mill photo 17
Rampon rights where
the trucks dumped raw
sludge dumped into the
sludge mill tank (receiving
hopper), which is in the
demolished oven. Hopper
fed augers in the gray
corrugated metal shack
which led to conveyor
belt, at top of picture.
Heads over to the
coke batteries in the
far bkgrnd.

I feel grit on this page as I write;
It appears to be fall out from
blast furnace located North.

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See outfall 005, the
round hole, and Burke
Brook, the square holes.
There is gizzard shad
swimming around here.
Water quality of the
Brook is, looks ok.
Photo 18

See a drip leg near the
river. This is one of
the closest to the river,
which is ~20 yds North.
There were boxes, metal (steel),
began using in mid 1970s
near drip legs to act

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as an oil separator. Held ~200 gallons, measured 4' high x 3' x 4'. Equipped w/ a baffle + a weir. Water overflowed weir + on to the ground when full. Oil was collected by various oil reclaimers until 1976 when the coke plant WWTP was built, then it went there. Tanks replaced boxes in mid 1980s.

Get to paint shop. See Waste Paint DSA. The ground is covered with slag. There is then soil beneath.

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Photos Cont'd

#	Time	Dir	Subject
20	1500	SW	Dripleg box + storage
21	1510	N	Paint Accum area.
22	1520	W	degreaser sludge box
23	1525	W	Degreaser DSA
24	1530	E	Degreaser + still
25	1530	SE	Still bucket.
26	1600	S	Desulpher liquor sump
27	1630	W	LMF sludge hugger box
28	1635	S	BOF baghouse/precip.
29	1635	S	BOF baghouse dust silo

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yellow & black & blue paints. A drain is nearby next to this area & it is a French drain, made of gravel in the ground, goes nowhere. Chem Tron picks it up. Sometimes thinner & paints (more) are in a bucket & poured into a 55 gallon drum. When full it is picked up within 3 days. Brush cleaners are in a 10-gallon metal container that stays closed. When the thinner

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is spent, the entire bin is emptied and put in the 55-gallon drum. Rick Jaworski, paint Shop Mgr.

See the former degreaser sludge box area. It has a monitoring well here.

50' South of this area is the degreaser DSA. It is a concrete pad, in bad condition. It could easily be knocked over by vehicles. No berm. It is 5" high, 10'x10'. Currently has 3 full 55-gallon

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drums of spent PCE. Inside electric bldg is the degreaser (pic no. 23) on left & still on the right. Still measures 2' x 3' x 6' tall. Mfd by Detrex Chemical Industries, Inc. Detroit, MI. A 3-gallon bucket is at the spigot. This transfers waste to 55-gallon drums.

Tar sludge decanter at Coke #1 does not have a berm. There are TWO decanters here. Neither has berms.

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See Coke #1 Basement. The heating air bakes ("under fire") are located here. It appears improbable that a liquid waste would have been dumped here; IT (cokers) would not tolerate any liquid in the basement as alleged by Walter Chapman

Desulpher Sump. at Coke #1

14' x 15' x 12' total interior volume of the waste liquor Sump. There was a loading dock out front. Various

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Transported by Eagle brook
A reclaimer boiled off
liquor quickly. From
gas scrapping the
soluble salts built up.
via underground piping Then evacuated ~~with~~ 12/14/93
the system to the sump.
A closed loop cleaning
system that was period-
ically evacuated Began
in ~1979 → 1990. This
story told by Terry Hill

See LMF WWTP. Takes
zinc out of the flue
gas. 2 hogger bores
here. 1 is empty, 1 is
1/8 full. They are stored

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closed, labelled hazardous
waste. The filter press
is above the hogger bores.

~~LMF WWTP~~ 12/14/93

Tour ends at 1650. Go to
offices for closing
meeting.

Precipitator at No 3 Power
house, #3 boiler is same
as precipitator at D boiler
at # 1 Power House (seen
~~first~~ thing today). Except
that there is no silo; the
flyash goes to the

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C5 + C6 B/F WWTP.

We discuss what we saw. LTV asked our opinion of Yucca Flats.

We went over the list of things we need.

Depart site at 1745

The following notes are made at 1830 in the hotel room. This day was a fast day in order to see all of the SWMUs identified. Overall, current operations manage wastes adequately. Past operations

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pose a significant environmental release potential.

Coke Plant #1 WWTP was basically a sump that was in a dark building (no electricity). The sump (as told by a rep.) was ~ 10 feet deep, concrete. When full, they vacuum truck would remove solids + take to Yucca Flats (Area B or C) for land filling. No photo + we did not get to see it.

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